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TABLE OF CONTENTS

EXCAVATIONS AT THE JOHNSTON SITE, INDIANA COUNTY, PENNSYLVANIA (with 25 plates and 14 figures) .... *Don W. Dragoo* 85

supplemented by

ANIMAL REMAINS FROM AN INDIAN VILLAGE SITE, INDIANA COUNTY, PENNSYLVANIA .... *John E. Guilday* 142

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Society for Pennsylvania Archaeology

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FOREWORD

With this issue of the *Pennsylvania Archaeologist* we take pride in beginning what we hope will be a series of major archaeological studies to be known as Memoir Issues. For the benefit of librarians and others who keep regular files of this publication, it must be emphasized that for filing purposes these Memoir Issues are to be considered as regular issues of the magazine and will be so identified by volume and number. Their distinctive character will be determined by the fact that each Memoir Issue will be devoted to a single major piece of research.

No set schedule for the appearance of Memoir Issues is planned. They will be published only when funds and the availability of proper subject matter permit. For the most part, these issues will be confined to research in the archaeology of Pennsylvania or to studies of general pertinence to the archaeology of the northeastern part of North America.

The editor wishes at this time to thank Mr. Dragoo and Mr. Guilday for their patience during the long period preceding publication of the present study. Thanks are also extended to Mr. James L. Swauger, Assistant Director of Carnegie Museum, for many helpful suggestions, and to the officers and directors of the Society for Pennsylvania Archaeology whose decision made publication possible.

Vernon Leslie,
Editor

Excavations at the Johnston Site, Indiana County, Pennsylvania

By
Don W. Dragoo

Introduction

Carnegie Museum's Upper Ohio Valley Archeological Survey, made possible by a grant from the Sarah Mellon Scaife Fund, has proved western Pennsylvania a fertile field for investigation. During the past three years several hundred sites of aboriginal occupation covering a wide span of time have been found and recorded. In October, 1950, Ralph S. Solecki of the River Basin Surveys aided by William J. Mayer-Oakes of Carnegie Museum located the remains of what appeared to be an important village of the Late Prehistoric period near the southern limits of the town of Blairsville and within the flood zone of the new Conemaugh River Reservoir. In a report of this survey Solecki (1951) made the following recommendation:

"Only one site, 36In2, situated on the Johnston farm in the Conemaugh Reservoir is recommended for excavation. That site, the most important one found during the survey, seems also to be one of the most important along the Conemaugh River. Since archeological data from that part of western Pennsylvania are lacking in the records, the site should be excavated. Surface indications are that at least two months of excavation will be required. The evidence points to occupation by a Late Prehistoric group of Indians, provisionally called the Monongahela Woodland people. Furthermore, traces of earlier occupation have been recovered in the same locale."

The probability that the site would be inundated prompted Carnegie Museum to conduct test excavations at 36In2 in June and July of 1952. The National Park Service, concerned over the imminent destruction of the site, executed a contract with Carnegie Museum for large-scale excavations, which were carried out in October and November of 1952 (Dragoo, 1952). The present report is based upon the findings of these excavations.

Without the assistance of a number of interested people the present report would have been impossible.

Special recognition is due the late Edward M. Johnston for his personal interest in the work and aid given to insure its completion.

Thanks are due Dr. Jean Harrington of the National Park Service and to members of the Pittsburgh District, U. S. Army Engineers, for technical assistance.

Thanks are also due William Mayer-Oakes, Mr. and Mrs. Albert Bauer, Edward V. McMichael, Barry Salsi, Joseph Weinell, William Miller, Paul Auen, John Debnar, and Elder L. McLaughlin for their labors on the excavations and to Dorothy E. Dragoo for assistance in the laboratory and preparation of the manuscript.

To the many others who have aided in the completion of this report, the author wishes to express his appreciation.

THE JOHNSTON SITE 36In2

The Johnston site is on the farm formerly owned by the late Edward Johnston, adjoining the southwest boundary of the town of Blairsville, Indiana County, Pennsylvania. This land is now part of the Conemaugh Basin area owned by the United States government. The site is on the first terrace forming the north bank of the Conemaugh River opposite the entrance of McGee Run and at an elevation of 937 feet above mean sea level. The first terrace consists of a strip of land approximately 1500 feet wide back of which the land to the north rises steeply to an elevation of 980 feet above sea level. Directly opposite the site, the south bank of the Conemaugh River is composed of bed-rock rising vertically to an elevation of 1025 feet above sea level. See Fig. 1.

The village under discussion in this report covers approximately 4.7 acres of the first terrace as it exists today. During the excavations it became apparent that a small portion of the site had been destroyed by erosion caused by the Conemaugh River cutting into its north bank. It is also apparent from the excavations and from materials found over the area in past years that another, older, occupation is scattered thinly over a wider area of the terrace than that of the village described herein. See Fig. 2.

The Excavations

During June and July of 1952 several test trenches were dug at the Johnston site by Alfred Bauer in cooperation with William J. Mayer-Oakes and the author of Carnegie Museum. In one of these test trenches post molds of the stockade were found and traced for a distance of about 150 feet by cross trenching. An oval or round stockade was indicated by the placement of the post molds. See Fig. 7.

With the information gained through the above tests, we were able to anticipate the general trend of the stockade and the limits of the village when work was resumed in October, 1952, under the cosponsorship of the U. S. National Park Service and the Carnegie Museum. In order to achieve an over-all sample of the village, several areas were selected for excavation on the west, north, east, and south central sections of the site after it had been surveyed and a grid system put into operation. These initial excavations consisted of trenches 100 by 10 feet. See Plate I and Fig. 3.

To facilitate the removal of the highly disturbed top soil, a small bulldozer was used to remove the first six inches of soil from the areas selected. The greater part of the soil removed in this fashion was screened or searched for materials that it contained. This proved to be a highly valuable method for speeding up work at this particular site. After the plow zone had been removed, the remaining soil was taken down in six inch levels to the sterile subsoil by trowel or by shovel where conditions permitted. In order to uncover completely a number of features found in the initial trenches, extensions were made where necessary by shovel and trowel. All cultural materials were separated and cataloged according to block number, level, and feature association.

The use of power machinery in archeological excavations has been under discussion for several years. It has been both praised and condemned. The use of such equipment at the Johnston site was begun on an experimental basis prompted by the fact that the site would possibly be destroyed by flood waters in the Conemaugh basin. The machine was so successful in the first trench excavated that it was used for all the large trenches. Damage to materials in the top six inch level and the underlying material and features was so slight as to be negligible. In one instance the track of the machine passed directly over the skull of a shallow burial with no resulting damage.

STRUCTURAL FEATURES OF THE SITE

For ease in presentation, the structural features of the Johnston village have been divided into the following categories: stockades and associated features, houses, storage structures, refuse pits, and fire pits. The relationships of the various features to each other, however, will be taken into consideration.

Stockades and Associated Features

In the test excavations conducted during June-July, 1952, a long row of post-molds was uncovered on the west side of the village. This feature was traced by partial excavation and cross trenches for one hundred and fifty feet. It was noted that this line of post-molds formed an arc of an apparently circular or slightly oval stockade.

Anticipating the general curvature of the stockade line found on the west side of the village, large trenches, one hundred by ten feet, were excavated on the southwest, north, and east sides of the village during October-November, 1952. The initial stockade was found in all of these trenches and a second stockade line was discovered some 8 to 10 feet toward the interior. In order to verify these findings and definitely to establish the size and configuration of the stockades, extensions from the large trenches were made to pinpoint the entire stockade. By this method it was found that the greater portion of the stockade lines on the south side of the village had been eroded away by the Conemaugh River.

From the information collected from all of the excavated areas it was possible to determine that there had been two complete parallel stockades. Both had been roughly circular with the outer stockade measuring approximately four hundred and fifty feet in diameter and the inner one approximately four hundred and thirty feet in diameter. The same type of construction had been used in both stockades. Posts 5 to 8 inches in diameter had been placed vertically into the ground to a depth of 16 to 20 inches and from 6 to 8 inches apart. Many of the post-molds gave evidence of having had 2 to 3 posts placed in them, and in a number of cases "wedging stones" were found around the edges of post-molds near the top of the subsoil. The wide spacing of the post-molds indicates that smaller vertical posts not reaching the subsoil or poles tied on horizontally had been used to fill the space between posts. See Plate II.

Parts of the other two palisades were found on the west side of the village. These were quite close to the parallel stockades which encompassed the village. Time did not permit the complete excavation of these fortifications; therefore, meager information was gained. The innermost of these stockades was found to cross over the parallel stockade lines. It seems possible that the main entrance to the village was somewhere near these stockades since no evidence was found for one anywhere else.

Of particular interest was the finding of three small semicircular structures connected to the stockades. One of these was found on each of the parallel stockades and on one of the fragmentary stockade lines on the west side of the village. These structures appear to have been bastions since they are located on the exterior side of the stockade and command a view of its face. The main framework of these projections was composed of twelve to fifteen saplings 3 to 5 inches in diameter placed vertically in the ground approximately twelve inches apart in a semicircular fashion from the main stockade which formed the back. These structures measured about 10 feet in width where they joined the stockades and projected an average of 4 to 5 feet from the stockades. Small timbers were probably woven among the saplings framework to enclose the bastion. See Figs. 4 and 8.

Near the interior side of both parallel stockades ditches were found which with some interruptions completely encompassed the village. These ditches varied in width from a few inches to as much as 7 feet. There was also a great variation in depth with some sections of the ditch being very shallow while other areas would be quite deep (43 inches maximum). It appears unlikely that these ditches were used for drainage or as part of the defensive system because of the variation in depth and complete absence in certain areas. It seems more plausible that these ditches were originally dug for earth to place around the base of the stockade posts. However, cultivation of the village for many years had completely destroyed any evidence of an elevated area where the stockade had once stood. Secondarily, the ditches were used as refuse dumps. Large quantities of broken pottery and animal bones were common. In some cases the ditches had been convenient areas for the placement of human burials. See Fig. 9 and Plate IV.

The parallel stockades may represent different periods, but the bulk of the evidence indicates that they were contemporaneous. An examination of the objects found in the stockade ditches gave no indication of time differences. The single stockade has been found most commonly at Late Prehistoric sites excavated in western Pennsylvania; however, parallel stockades have been found at the Fort Hill site in Somerset County (Cresson, n.d.) and at the McFate site in Crawford County (Schoff, n.d.). Ditches along the interior of the stockades occurred at the McFate site and similar ditches have been found at Late Prehistoric sites in New York (Ritchie, 1936). The small projecting semicircular bastions found at the Johnston site appear to be unique since no mention of such structures occurs in the reports of previous excavations in the area.

Houses

Around the inside of the stockades the people had built their houses in a somewhat smaller circle. Outside of the stockades there seems to have been little or no building of importance. The central part of the village appears to have been an open plaza with only an occasional fire pit since evidence of structures was absent in the excavations conducted in that area. Post-mold patterns of two houses were found on the north, five on the west, and one on the east side of the village. These houses and their associated features were completely or partially excavated with the following results:

House f.1

The remains of this house were found on the north side of the village approximately twenty feet inside of the stockade, and consisted of a circular arrangement of post-molds 20 feet in diameter. The post-molds ranged from 3 to 4 inches in diameter and 14 to 16 inches apart. The average depth to the bottom of the post-molds was 19 inches from the surface.

This house represented the first of a series of features within the area and was greatly disturbed by succeeding activity. House f.2 was constructed in the immediate area and overlapped a major portion of this house. On the west and north sides of the house, large pits had been dug through the house wall, destroying the post-molds. See Fig. 5.

A number of interesting features were found within the house. It was somewhat difficult, however, to determine which of these features were co-existent with this house and house f.2 since all such features in the area extended into the disturbed plow-zone. Near the center of the house was found a fire pit and distributed around and near the wall were a number of refuse pits. The large stone lined burial pit f.16

containing burials 14, 15, and 16 was found within the limits of this house and house f.2. A large number of post-molds were found throughout the interior, some of which may represent roof supports, while several small molds (2 to 3 inches in diameter) may have been support posts for rack beds. There was no indication of a doorway in the wall.

House f.2

This house was found overlying house f.1 on the north side of the village. The post-molds of this house formed a circle 22 feet, 4 inches in diameter. The post-molds were from 18 to 21 inches apart and 3 to 4 inches in diameter. The pattern of this house was complete except for 4 feet of the north wall which had been disturbed by a large storage pit f.6. The post of the west wall had been placed through the large storage pit f.5 that had disturbed house f.1. See Fig. 5.

Within the boundaries of this house was also the profusion of features mentioned for house f.1. Located approximately in the center of the house was a fire pit with walls burned to a brick-red by intense heat. About 18 inches from the fire pit was found a small clay bench 1 foot square. Again, some of the many post-molds in the interior of the house may represent support posts. There were no breaks in the wall pattern that would indicate the presence of a doorway.

House f.43

Approximately 6 feet within the inner stockade (f.34) on the west side of the village were located the post-molds of a small circular house 12 feet in diameter. The post-molds were from 16 to 18 inches apart and 3 to 4 inches in diameter. See Fig. 4.

This house was early in a sequence of several events in the area and was vastly disturbed by these succeeding activities. The entire north wall had been destroyed by a large intrusive refuse pit. In turn, the large pit (f.45) for burials 10 and 11 had been dug through the refuse pit to a deeper level. The burials were within the boundaries of the house, but they cannot be considered as having been placed there while the house was in existence. The burials appear as the last of a sequence of events for the area.

A large ash-filled fire pit was found within the house walls but was intrusive into the refuse pit and thus appears not to be contemporaneous with the structure. A number of post-molds 2 to 4 inches in diameter and of no definite pattern were found scattered throughout the house interior. There was no indication of a doorway within the undisturbed wall pattern.

House f.57

The remains of this house were found approximately 20 feet southeast of house f.43 on the west side of the village. It consisted of a circle of post-molds 17 feet in diameter. The posts, 2 to 4 inches in diameter, had been placed approximately 18 inches apart and had been sunk to a depth of from 14 to 16 inches. See Fig. 4.

This structure appears to have partially destroyed an earlier house in the same general area, and in turn a section of the west wall of this house had been destroyed by a storage pit and burial 9. A long row of post-molds was found passing through the center of the house from the outside where it continues for several feet into an unexcavated area. There was no visible means of dating this structure relative to the house or of determining its purpose. The house; however, appears to fall within the mid-period of occupation of this particular area of the site.

Located within the confines of the house walls was a small firepit filled with charcoal and cultural debris. Near the fire pit was located a large flat stone showing some signs of use. This stone was approximately 10 inches below the surface. There was a number of scattered post-molds within the house, but no definite pattern could be determined from them.

Attached to the southwest side of the house was a large pear-shaped storage pit, the bottom of which was 16 inches below the surface. The pit measured 9 feet long by 3 feet and 10 inches at its maximum width with a minimum width of 2 feet at the point of junction with the house wall. The entire outer margin of the pit was encircled by small post-molds 2 to 3 inches in diameter which represented the framework of the small structure that once enclosed this storage chamber of the house. This storage pit had been constructed immediately over a similar pit that had preceded it in the area.

House f.64

A small segment of a highly disturbed circular house wall was excavated a few feet northeast of house f.43 on the west side of the village. The post-molds were 14 to 16 inches in depth, 2 to 4 inches in diameter and ranged from 14 to 18 inches apart. Two refuse pits were within the boundary of the house. This house appears to have been early since a number of small refuse pits and post-molds had destroyed parts of the pattern. A large storage pit was found near the house wall, but it appears to have been attached to another house which had been obliterated from the area by succeeding structures. Time did not permit the complete excavation of this house. See Fig. 4.

House f.65

This house was located immediately east of house f.64 and north of house f.67. Only a small segment of the circular house wall was excavated. The same type of structure as the other houses was indicated. See Fig. 4.

House f.66

Several post-molds of a circular house wall were found immediately south of house f.57. Attached to this wall was a large pear-shaped storage pit that had preceded and had occupied the same area as the pear-shaped pit attached to house f.57. The major portion of this house was unexcavated. See Fig. 4.

House f.68

A small segment of a circular house wall was found 11 feet inside of the inner parallel stockade on the east side of the village. The post-molds were 2 to 4 inches in diameter, 18 to 20 inches in depth, and spaced approximately 16 inches apart. A large fire pit was found near the interior side of the wall, and burials 4 and 13 of two young children were immediately outside of the wall. See Fig. 4.

Summary

The typical house appears to have been a circular structure 18 to 20 feet in diameter, made of slender saplings placed vertically in the ground 14 to 20 inches apart and arched to the center of the house where they were tied. There was no general occurrence of a central post hole; therefore, it was apparently not a necessary part of the house construction. The framework was probably then completely covered with bark except for a small smoke hole at the peak of the roof. It was impossible to determine from the post-mold patterns where the doorway was located, but an entrance could have been made at any of the larger spaces between posts. A doorway less than 2 feet wide was evidently considered sufficient. Even the entrances into the adjoining pear-shaped storage pits were never more than the normal distance between house posts. See Fig. 10.

An interesting insight into the construction of houses somewhat similar to those at the Johnston site was written by Loskiel (1794, p. 53) concerning the Delawares and Iroquois: "An Indian hut is built in the following manner: They peel trees, abounding with sap, such as lime trees, & c., then cutting the bark into pieces of two or three yards in length, they lay heavy stones upon them, that they become flat and even in drying. The frame of the hut is made by driving poles into the ground, and strengthening them by cross-beams. This framework is covered both within and without with the above-mentioned pieces of bark, fastened very tight with basts or twigs of hickory, which are remarkably tough. The roof runs up to a ridge, and is covered in the same manner. These huts have one opening in the roof to let out smoke, and one in the side for an entrance. The door is made of a large piece of bark without either bolt or lock; a stick, leaning against the outside, being a sign that nobody is at home."

The many post-molds in the interior of the houses near the walls may represent the remains of low platforms used for beds. Numerous historical accounts mention the use of low platform beds among Indians of the Northeast (Bushnell, 1919, p. 24).

Fire pits, refuse pits, and burials were common in the subsoil below the house patterns. Fire pits were more often placed near the center of the house. Multiple fire pits were found within the boundaries of some houses; they probably represent different time periods. The refuse pits found in the houses may have been used for rubbish disposal when the house was standing, or may have been used when that particular area was unoccupied. The refuse pits in the latter case could represent a period either before the construction of the house or after its abandonment. The case of burials below house floors presents the same question. They could have been placed there before the house, while the house was still in existence, or after its destruction. Since all features extended into the disturbed plow zone and no actual house floors were found, it was impossible in many cases to determine the sequence of construction.

A number of instances of known sequence in the position of features have been mentioned in the description of individual houses. This was easily demonstrated in the cases where storage structures, refuse pits, and burials had destroyed house walls and other features. The need for constant repairing and frequent rebuilding of houses constructed of quite perishable materials was clearly shown. All areas on which houses were located showed evidence of many disturbances over a considerable period of time.

Many circular houses of the type found at the Johnston site have been reported from Late Prehistoric villages in southwestern Pennsylvania. The small circular house was the dominant type uncovered by the WPA excavations in Somerset County (Cresson, n.d. and Butler, 1939). Houses of a similar type have been reported from the Baum site of the Fort Ancient Complex in Ohio (Mills, 1906, pp. 55-59). Information on Fort Ancient sites is very incomplete, but the possible presence of circular houses has been mentioned for the Gartner and Madisonville sites (Griffin, 1943, pp. 48, 120). The circular houses of the Johnston site also share certain features with structures found at the Canandaigua and other sites of the Owasco Aspect of New York (Ritchie, 1936). See Fig. 11.

Storage Structures

One of the most interesting features found at the Johnston site was the post-enclosed structures which were apparently used as storage pits. Seven of these structures were found in the vicinity of or attached to the house patterns. In plan they ranged from oval to pear-shaped with the latter being predominant. They were all basically the same in construction. A pit had been dug to a level below that of the house floor, penetrating into the subsoil as much as 8 inches and from the present surface 18 inches. The floor in most storage pits was not level, but sloped downward from the entrance to the farther end. These pits averaged approximately 10 feet in length and 4 and ½ feet in width. Around the inner margin of the pit were found the post-molds of the enclosing structure which were somewhat smaller and closer together than those of the houses. They averaged 2 to 3 inches in diameter and 16 to 20 inches in depth from the surface. A light framework of saplings was probably bent over to form a dome which was covered with bark in the same fashion as the houses. The entrance to the structure was probably at the narrow end, and when joined to a house the pits apparently could be entered only from within the house. The entrance appears to have been small, between 1 and 2 feet. See Plate V and Figs. 10 and 11.

Three of these structures were definitely attached to house walls at the narrow end of the pit. It was impossible to determine whether the other four structures excavated had been joined to the houses because of disturbance and lack of information from unexcavated area into which three of these pits extended.

On the west side of the village two pits were found which overlapped. Such a superposition represented a form of stratification, since it indicated a lapse of time between the periods when the pits were being used. The separate existence of these pits was confirmed by the fact that each was connected to a house wall, one of which had partially been destroyed by the other. A comparison of the scanty materials from these two pits showed no noticeable differences. One storage pit on the west side of the village had been partially destroyed by an intrusive burial, and two on the north side of the village had been disturbed by refuse pits.

Cultural debris was scarce in all of the pits of this type excavated. This was a marked contrast to the great amounts of broken materials found in the refuse pits and in the ditches associated with the stockades. The only class of artifact apparently associated with the storage pits at this site was crude milling stones and in one of the structures a large stone with several pits worn into both top and bottom surfaces. Large amounts of decomposed organic materials, however, were found in all of these pits. Unfortunately, none of this material was sufficiently preserved to be identified. Cresson (p. 44, n.d.) has the following to say about the contents of similar pits found during the excavation of Late Prehistoric sites in Somerset County, Pennsylvania:

"In a few cases the floor of a storage pit was found covered with a layer of charred bark and grass. Charred corn grains, corn cobs, and nuts have also been discovered on pit floors, and it was especially because of the presence of these products that it was assumed that the pits were used for corn and other goods."

Similar storage pits were found at the Montague, Hanna, and Clouse sites in the same area. These pits, however, were apparently round and with the post-molds outside of the margin of the pit (Butler, 1939, p. 19).

Manson, McCord, and Griffin (1943, p. 379) mention that a small percentage (6%) of the pits found at the Keyser Farm site in Virginia were pear-shaped or irregular. Concerning the presence of structures associated with pits at Keyser Farm they state:

"In addition to the feature noted above, there were a number of pits entirely or partly surrounded by post-molds. Whether these represented a rooflike structure over the pit or a fencelike row of pickets around it to keep out scavenging animals was not determined."

The pear-shaped storage structure appears to be a rather distinctive feature of Monongahela sites of the Late Prehistoric Period in southwestern Pennsylvania. They differ from the deep "bell-shaped" storage pits found at the majority of Fort Ancient sites and with other known manifestations in the Northeast.

Refuse Pits

In addition to the refuse filled ditches associated with the stockade, refuse pits of various sizes and shapes were found scattered throughout the village. A large number of these pits were excavated and their contents analyzed. These pits ranged from a few inches in diameter to as much as 7 feet while the depth went from just below the plow line (8 to 10 inches) to 41 inches. The bulk of the contents consisted of broken animal bones, mussel shells, and pottery sherds. Such pits had been placed in any convenient areas of the village including the house floors. These pits were intrusive into burials. There appears to have been no attempt by the people to standardize on any specific size or form for these pits. See Figs. 4-7.

Fire Pits

A number of fire pits were found in and around the houses. Three fire pits were found near the center of house patterns. These pits were shallow basins (14 to 16 inches below the surface) and from 2 to 3 feet in diameter. In the majority of the pits no special construction was indicated. A few of the pits had been used for long periods of time, and the surrounding earth had been burned to a brick-red color. In others the earth was only blackened from the charcoal. Two of the pits were filled with stones which were discolored and cracked from heat. Few cultural items were found in the charcoal and organic debris of the pits. See Fig. 4-7.

BURIALS

Burials were found scattered throughout the village. Seventeen burials were removed during the excavations. The following information and observations were noted for each burial:

Burial #1, Adult Male, West Trench, Block 6

This was a loosely flexed burial of an adult male in a shallow pit (depth 17 inches below the surface). It had been placed partially on its back and left side with the head to the north and face towards the east. The arms were extended downward, the right hand on the outer surface of the right leg, left arm between the legs. The skull and long bones were in a fair state of preservation, but the ribs and vertebrae were badly decayed. The feet were only 8 inches below the surface and had been partially destroyed by the plow. See Fig. 4.

There were no intentional burial goods in the grave, but the fill had been composed of village debris containing pottery sherds, flint flakes, broken mussel shells, and animal bones. A small refuse pit 2 feet in diameter had been intrusively dug into the burial near the knees.

Burial #2, Adult Male, West Trench, Block 6 and 7

This tightly flexed burial was found at a depth of 22 inches below the surface in a large refuse filled pit which appears to have been part of the ditch on the interior side of the fragmentary stockade f.34. The body had been placed on its right side with the head towards the southeast, facing northeast. The legs were tightly flexed with the knees against the chest. The arms were flexed with the hands near the chin. The skull and long bones were well preserved, but the ribs and vertebrae were decomposed. See Fig. 4.

There were no intentional burial objects, but refuse containing pottery sherds, flint flakes, small stones, and animal bones was found immediately above and mixed with the fill of the grave.

Burial #3, Adult Male, West Trench, Block 6

A tightly flexed burial was found 5 inches immediately below Burial #2 in the same ditch which reached to 37 inches in depth at this point. The body had been placed on its right side with the head to the north facing west. The legs were drawn up to the chest. The left arm was extended between the legs while the right arm had been flexed with the hand against the face. The skull and long bones were in fair state of preservation; the ribs and vertebrae were badly crushed and decomposed. See Fig. 4.

There were no intentional grave goods, and the fill lacked the cultural debris found around and above Burial #2. This burial appears to have been made before the ditch had been used as a refuse dump.

Burial #4, Infant, East Trench, Block 1

This burial was found in a small pit 12 inches in diameter and 22 inches in depth below the surface. This burial appears to be that of an infant at or near the time of birth. The tiny body apparently was jammed feet first into the small pit. The fragile parts of the skull were found resting above the remains of the skeleton. The face was turned towards the north. The bones were disarticulated and badly decomposed. There were no grave objects. See Fig. 6.

Burial #5, Child, West Trench, Block 9, *Row* 2 *N*

This was a burial of a child two to three years of age in a small pit 23 by 12 inches by 16½ inches in depth. The body had been flexed on its right side with the head to the east facing north. The arms were flexed with the hands at and under the face. The bones were in extremely bad condition and had been crushed by the weight of the earth. See Plate VII and Fig. 4.

Burial #6, Infant, West Trench, Block 9, *Row* 2 *N*

This appears to have been the burial of a fetus in a small pit extending to a depth of 17 inches below the surface. No definite position could be determined since the bones were fragmentary and some were missing. There were no grave goods. See Fig. 4.

Burial #7, Child, West Trench, Block 9, *Row* 2 *N*

This burial was of a child four to five years of age in a small pit 2 feet in diameter and 23 inches in depth below the surface. The body had been flexed on its right side with the head towards the east facing north. The arms were flexed with the hands under the face. The bones were rather poorly preserved. There were no intentional grave goods. See Fig. 4.

Burial #8, Adult, Sex Undeterminable, North Trench, Block 5 & 6

This burial was discovered in the bottom of the ditch along the inner parallel stockade at a depth of 39 inches. The body had been flexed on its left side with the head to the south facing west. The bones were badly decayed, some having been almost completely destroyed by the acid condition of the soil. See Fig. 5.

Apparently there were no intentional grave goods, but the fill around and above the burial was composed of village debris containing pottery sherds, flint and stone fragments, animal bones, and charcoal.

Burial #9, Adult Female, West Trench, Block 9, Row 1 N

This burial had been placed in an oval pit 3 to 4 feet by 44 inches in depth dug intrusively into a storage structure. A few inches below the floor level of the storage structure and several inches above the burial was found a mass of charcoal, ash, and burned clay. Some of this material had sifted down and around the burial. There apparently had been an intense fire kindled directly above the burial, but the bones showed no evidence of having been burned. See Fig. 4.

The body had been tightly flexed on its left side with the head towards the north facing east. The arms were flexed with the hands at the face. The bones were well preserved.

There were no burial goods associated with the burial, and there was an absence of village debris in the grave fill with the exception of small pieces of charcoal.

Burial #10, Adult Female, West Trench, Block 6, Row 2 N

This burial was one of two found in a large pit approximately 5 feet in diameter and 32 inches in depth which had been intrusively placed into an extensive refuse pit which in turn had destroyed part of a house pattern. The body had been loosely flexed on its left side with the head to the south facing west towards Burial #11. The arms were loosely flexed with the hands near the knees. The bones were in a good state of preservation. See Plate VI and Fig 4.

Associated with this burial were a number of interesting cultural objects. Around the leg bones from near the waist to below the knees were 1458 tubular beads cut from bird long bones. Apparently they had been sewn onto a skirt of fabric or buckskin. Around the neck were found several tiny drilled shells of the species *Marginella apicina.* Near the center of the vertebrae underneath the skeleton was uncovered a polished bone tube approximately 5 inches long and ¾ inch in diameter, which had probably been attached to the hair. Several small, flat stones showing evidence of having been used as milling stones were located near the skull. Near the knees at the foot of the grave was an unusual compound pottery vessel.

The fill of the grave was composed of humus laden earth containing village debris from the refuse pit into which the grave had been dug. In the fill a few inches above the burial, there was evidence of there having been a fire of considerable intensity. In the charcoal and ash of this fire were found a few fragments of burned matting or basketry.

Burial #11, Child, West Trench, Block 6, Row 2 N

This burial of a child eight to ten years of age was found in the same grave with Burial #10. The body had been tightly flexed on its right side with the head to the south facing Burial #10. The arms were flexed with the hands near the face. The bones had been rather well preserved. See Fig. 4.

There were no objects in direct association with the burial. The milling stones and the pottery vessel described above with Burial #10 may well have been an offering to the child as well as to the woman since both were buried contemporaneously.

Burial #12, Adult Male, West Trench, Blocks 4 & 5, Row 2 N

This burial was found in a pit 3 by 4 feet and 36 inches in depth that apparently had been dug into the ditch on the interior of the innermost parallel stockade before it had been filled with refuse. The body had been flexed on its left side with the head to the east facing south. The arms were flexed with the hands near the face. The bones were in a fair state of preservation. There were no accompanying objects, and the fill around the burial contained no village debris. See Fig. 4.

Burial #13, Infant, East Trench, Block 2

This was a partially flexed burial of a young infant in a small pit 28 inches in depth. The body had been placed on its left side with the head to the south facing west. The bones were in a rather fragmentary condition. This burial was in close proximity to Burial #4. There were no associated materials. See Fig. 6.

Burial #14, Child, North Trench, Block 2E

This burial of a child five to six years old was one of three children found in a pit 3 feet in diameter and 33 inches in depth near the interior of the east wall of both houses f.1 and f.2. The body had been flexed on its left side with the head to the south near the east side of the pit. Burial #15 occupied the north end of the pit while Burial #16 had been placed near the west side. The bones were rather poorly preserved. There were no objects directly associated with this burial. See Fig. 5.

The pit containing these burials was of considerable interest since it differed from all others excavated at the Johnston site. A number of broken hammer and abrading stones were found in the pit from near the plow line (8 inches below the surface) to within about 12 inches of the burials. Near the plow line level these stones had also been arranged around the margin of the pit. Just below these stones, two large, flat stones lined the west wall of the pit.

Burial #15, Infant, North Trench, Block 2 E

The same conditions prevailed for the burial of this tiny infant as for Burial #14. The body had been extended on its back with the head towards the west near the north wall of the pit. The bones were very poorly preserved. See Fig. 5.

Around the neck of the burial were found 1 elk incisor pendant, 4 pendant shaped shell beads (imitation elk canines) and 6 small tubular beads of shell.

Burial #16, Infant, North Trench, Block 2 E

This burial of a young infant was in the same grave described for Burials #14 and #15. The body had been extended on its back with the head to the south directly opposite Burial #14. The bones were very fragmentary. There were no objects in direct association with the burial. See Fig. 5.

Burial #17, Child, Central Trench, Block 3

This burial was of a young child in a small pit of a depth of 17 inches below the surface. The bones were mixed and fragmentary since a small refuse pit had been placed in the same area after the burial. See Fig. 6.

Of the seventeen burials recovered, four of them had been placed in the ditches associated with the stockades, twelve in or near the houses, and one in the open plaza area. All of the burials (Nos. 2, 3, 8, 12) found in the stockade ditches were of adults, while only three (Nos. 1, 9, and 10) of the thirteen found in the main habitation areas were of adults. Five of the burials (Nos. 10, 11, 14, 15, and 16) found in the main habitation areas were within the boundaries of house walls; the remaining burials were in close proximity to the houses. All of the adults and five of the children were buried in a tightly or loosely flexed position, all lying on the side except for Burial #1 which was partially on the back. Two of the children (Nos. 15 and 16) were in an extended position on their backs. Disturbance and the fragmentary condition of the remaining three infant skeletons (Nos. 4, 6, and 17) made it impossible to determine the original position.

Burial was most commonly made by the simple process of digging a hole in the ground no larger than necessary to receive the remains, putting the deceased inside, and filling it up again. The stone lined and filled grave for Burials #14, 15 and 16 was the only one that apparently had received any special attention in construction. Burials #10 and 11 had been placed in the same grave but there was no unusual construction indicated. Butler (1939, p. 13) mentions the use of stones in a grave at the Montague site in Somerset County, Pennsylvania; and Cresson (n.d., p. 50) reports a number of graves at sites in the same area in which stones were used.

Of particular interest was the evidence of fire in the grave immediately above the skeleton of Burial #9 and the skeletons of Burials #10 and 11. Engberg (1930, p. 87) described the presence of fire in a number of graves at the Fuller's Hill and Fullerton Farm sites, and Butler (1939, p. 13) mentions the evidence of fire in one of the graves at the Montague site. The occurrence of graves with evidence of fires in them at a number of scattered sites would strongly suggest some form of burial rite in which the fire played an important part.

SKELETAL MEASUREMENTS AND COMPARISONS

The number of adult individuals from the Johnston site is far from adequate for comparative purposes. However, it will be of some interest to make a few comparisons with similar data from sites near the area, and to which some cultural resemblances seem to extend. These include the Keyser site (Manson, McCord and Griffin, 1944); Madisonville, Ohio (Hooton and Willoughby, 1920); the Younge site in Lapeer County, Michigan (Hughes, 1937); the Canandaigua site in Ontario County, New York (Ritchie, 1936); and Monongahela sites dug by the W.P.A. in southwestern Pennsylvania (Stewart, n.d.). See Table 1.

Of the six skulls in the Johnston series, two show changes in shape clearly attributable to occipital deformity while three others may be slightly deformed. Only one skull appears to be completely free of deformation. Stewart (n.d.) found that there was a roundness of the head in some of the Monongahela series that suggested the effect of deformity, but that this roundness was nearly always restricted to the females. The Johnston series is far too small to show any statistical sexual difference in the occurrence of deformation.

Table 2 shows that there is considerable round-headedness present in the Johnston, Keyser, Pennsylvania, and Madisonville series but very little in the Younge and Canandaigua series. The Johnston group is quite high on the scale, but this is undoubtedly due to the deformity. However, the lowest Johnston individual cranial index is 79.0. The Pennsylvania series from Monongahela sites has a primary peak at 70.0 to 74.9 and a secondary peak at 80.0 to 84.9. Stewart believed that the secondary peak was due to deformity or, since roundheadedness occurred more frequently in females, that a different physical group may possibly be represented in the female population. The primary peak he believed to be the normal skull type. All the Johnston skulls (male and female) closely approximate the Pennsylvania secondary peak. In cranial index the Johnston skulls appear to be more closely related to the Keyser and Madisonville groups. The Younge and Canandaigua groups are at the other end of the scale and are not closely related.

The relative head height is another important aspect of head shape. According to the distribution of the mean height index shown in Table 3, the skulls from the Johnston site appear in the upper part of the range; that is, they are relatively high. In this feature they are more closely related to the Pennsylvania and Keyser groups. The Madisonville and Canandaigua groups appear to be intermediate while the Younge group falls in the lower part of the range.

Measurements and indices of the face are not available or inadequate in number for many of the groups. Only the nasal index will be compared. As is shown in Table 4, the majority of Johnston skulls fall within the range of 47.0 to 50.9 (mesorrhiny) with the remainder relatively high on the scale (platyrrhiny). The Pennsylvania group (consisting entirely of females) shows an uneven distribution as does the Canandaigua series (mostly males). The Younge group has a high percentage of broad noses while the Madisonville and Keyser groups more closely approximate Johnston.

It is of interest to note the presence of ear exostoses in one of the male skulls from Johnston. Stewart found that 30.8 per cent of the Pennsylvania series possessed this condition. This feature is practically absent in the group from the Keyser site. Ear exostosis is not a common feature in the northeastern states but increases towards the south and down the Ohio Valley.

Pathological changes of particular importance in the Johnston skulls relate to the teeth. Dental caries were present in all except one of the males. All males have one or more teeth missing, most commonly molars and premolars. The loss of teeth results in irregular wear from malocclusion. This type of wear was present in all the male skulls. The female skulls, in marked contrast to the males, all possessed good and complete sets of teeth. The good condition of the teeth in the females in contrast to the males may be attributed to age. The males ranged in age from twenty-five to forty years while the females were both under thirty years. The only good teeth in the male sample belonged to an individual about twenty-five years old. The decay and loss of the teeth in this group reflects the result of a diet deficient in the elements necessary for good tooth formation. The general condition of teeth at the Johnston site is typical for most groups of eastern Indians for which information is available.

Interpretive Summary

The skeletal series reported here for the Johnston site is inadequate for establishing definite relationships with other groups. It includes only six adults (four males, two females) with an indication of marked deformity in two of the skulls and possible deformity in three others. The comparative series from nearby or culturally related sites are also numerically inadequate. Of the three metrical ratios compared (cranial, head height, and nasal), only in the cranial index does there appear to be a marked difference. This difference distinguishes the Johnston series from the northern sites—Younge and Canandaigua.

There is a distinct absence from the Johnston series of the extreme longheads that are typical in most northeastern groups. The Johnston series appears closely related to the southern and western groups (Keyser and Madisonville) and with the Pennsylvania series from sites of the Monongahela Complex.

The presence of deformity at the Johnston site conforms with the findings of Stewart with the Pennsylvania series. Deformity as a cultural trait was distributed over the Southeast and among people of the Mississippi Pattern in the Ohio and Mississippi Valleys, but was generally absent from the Northeast. It appears that the presence of deformity in the Johnston and Pennsylvania series indicates a cultural influence from sites down the Ohio Valley to the west and from the South. Stewart emphasizes the possibility that the more round headed females of the Pennsylvania series were derived from the South. The extremely deformed female Burial #10 accompanied by the unusual compound pottery vessel at the Johnston site may represent an individual from outside the immediate area.

Ear exostosis closely parallels the distribution of cranial deformity (Stewart n. d.). The presence of this condition in the Johnston and Pennsylvania series would thus point to influence from areas to the south and west. Both deformity and ear exostoses are known from the Middle Mississippi culture in the Middle and Lower Ohio Valley.

TABLE 1
CRANIAL MEASUREMENTS

	Male				*Female*	
	B.1	B.2	B.3	B.12	B.9	B.10
Deformation	?	Sl.	Sl.	MK.	Sl.	MK.
Max. Length	171	176	177	184	166	158
Max. Width	139	143	148	154	135	147
Basion-bregma ht.	138	145	142	146	138	138
Cranial Index	81.2	81.2	79.0	83.6	81.3	93.0
Mean ht. index	89.0	89.3	87.6	86.3	92.0	90.7
Min. frontal dia.	85	91	95	91	82	82
Nasion-Menton ht.	112	125	116	125	117	114
Alv. pt. nas.ht.	72	72	74	78	72	70
Dia. biz. max.	142	146	142	151	129	129
Facial index, upper	50.7	49.3	52.1	51.9	55.8	54.2
Endobasion-nas.	104	100	104	113	99	97
Endobasion-prealv. pt.	100	98	101	109	90	97
Facial angle	72.2°	70.0°	71.1°	70.0°	74.0°	69.5°
Orbital ht. mean	34	35	31	38	34	37
Orbital bt. mean	41	42	42	41	39	41
Orbital index	82.9	83.3	73.8	92.6	87.1	90.2
Nasal ht.	51	51	50	57	49	51
Nasal bt.	26	26	30	27	23	27
Nasal index	50.9	50.9	60.0	47.3	47.9	52.9
Deformation	?	Sl.	Sl.	MK.	Sl.	MK.

TABLE 2

CRANIAL INDEX: COMPARATIVE PERCENTAGE

Index Class	65-69.9	70-74.9	75-79.9	80-84.9	85-89.9	90.94.9
Johnston (6)	-	-	16.7	66.6	-	16.7
Pennsylvania (13)	-	53.8	7.7	23.1	7.7	7.7
Keyser (9)	-	-	22.2	44.4	33.3	-
Madisonville (19)	-	5.3	47.4	36.8	10.5	-
Younge (32)	6.2	37.5	46.9	9.4	-	-
Canandaigua (11)	18.2	72.7	9.1	-	-	-

TABLE 3

MEAN HEIGHT INDEX: COMPARATIVE PERCENTAGE

Index Class	80.4	80.5-83.4	83.5-86.4	86.5-89.4	89.5-92.4
Johnston (6)	-	-	16.7	50.0	33.3
Pennsylvania (9)	-	11.1	22.2	44.4	22.2
Keyser (11)	9.1	18.2	9.1	63.6	-
Madisonville (16)	6.2	25.0	37.5	25.0	6.2
Younge (25)	8.0	40.0	40.0	12.0	-
Canandaigua (8)	-	12.5	25.0	37.5	25.0

TABLE 4

NASAL INDEX: COMPARATIVE PERCENTAGE

Index Class	46.9	47-50.9	51-57.9	58.
Johnston (6)	-	66.6	16.7	16.7
Pennsylvania (6)	33.3	16.7	33.3	16.7
Keyser (8)	25.0	25.0	50.0	-
Madisonville (15)	26.7	26.7	46.7	-
Younge (19)	-	15.8	42.1	42.1
Canandaigua (8)	37.5	12.5	37.5	12.5

POTTERY

An examination of 6202 pottery sherds indicated that 96.53% were shell-tempered, 1.03% limestone-tempered, 1.53% fine grit-tempered, .66% coarse grit-tempered, and .24% untempered.

The shell-tempered sherds (5987 sherds) were 99.0% cord-marked with the remaining 1.0% representing a plain or smoothed over cord-marked surface. Decorations consisting of incised and trailed lines in rectilinear patterns were found on only 15 sherds and 1 whole vessel. On 2 of the sherds and the whole vessel punctations were also present. See Fig. 14.

The greatest variation in the pottery was found in the lip decoration of the rims. The most fashionable decorations were transverse or oblique notches made by a cord-wrapped stick or paddle-edge in varying depths on a flattened or rounded lip. Other lip decorations consisted of cord-marking continued from the body, incised notches, and occasionally punctations and castellations. See Figs. 10 and 11.

Appendages to the rims were rare and when found consisted of small handles or lugs. The semi-lunar lugs found at this site are reminiscent of those found at the Baum component of Fort Ancient (Griffin, 1943, Plate I) and at the Feurt Site (Mills, 1917, p. 363). See Plate XII.

The study of the sherds indicated that rims with paddle-edge notched, cord-marked, or plain lips belonged to relatively large straight to slightly flaring rimmed vessels while those with incised or punctated lips belonged to much smaller vessels.

The shell-tempered, vertical compound pottery vessel found with Burial #10 was a rare form at the Johnston site, and appears to have relationships outside of the immediate area. The closest relationship seems to be with that of the Baum Component of Fort Ancient (Griffin, 1943, Plate I). There are similarities; however, to Andaste vessels (Moorehead, 1938, Plate XX) and to those at the Strickler site of the Susquehannock Indians (Cadzow, 1936, Plate 26-27). See Plate XV.

The small sample (64 sherds) of limestone tempered sherds consisted of 75.8% cord-marked and 24.2% with plain surface. The slightly flaring rims possessed plain, rounded lips.

The fine grit-tempered pottery (95 sherds) was composed of sherds 59.0% of which were cord-marked and 41.0% plain. The rims were plain with the exception of 1 sherd which had been incised.

The coarse grit-tempered sherds (41) all have cord-marked exteriors and generally cord-marked or fabric impressed interiors. Only 4 sherds had plain interiors. The paste was very sandy and friable. The temper varied from crushed quartz and chert to small pebbles mixed with crushed limestone. The rims are straight with plain or cord-marked lips. A fragment of a lug handle was found on one rim.

The coarse grit-tempered pottery was found only in the western side of the village and quite possibly represents a much earlier occupation; however, no stratigraphic evidence was found to support this contention.

A number (15) of untempered sherds were found to belong to small toy vessels. The body was plain or smoothed-over cord-marked. Transverse incised notches were common on the lips, but plain rounded or flattened lips also occur. Incised decorations were found on 2 body sherds, 1 in conjunction with fine punctations.

From pottery clay were fabricated small elbow pipes used for smoking tobacco and clay balls about the size of marbles which may have been used in some type of game. See Plate XVIX.

POTTERY TYPES

On the basis of paste and associated features it was possible to assign the sherd samples from the Johnston site to the following established pottery types:

MONONGAHELA CORD-MARKED

PASTE:

Method of Manufacture:	Coiled, malleated with a cord-wrapped paddle.
Temper:	Shell, usually moderate to finely crushed, composing 10% to 30% of the paste.
Texture:	Fine laminations paralled to vessel walls.
Hardness:	Average 2. 5 to 3. 5.

Color: Exterior surfaces are generally dark ranging from buff to black; the majority of interior surfaces are gray to black.

SURFACE FINISH: Exterior surfaces have been roughened by the impressions of a cord-wrapped paddle. On some sherds these impressions are partly smoothed. Interior surfaces are usually well smoothed. The cord impressions usually meet the lip at an oblique angle.

DECORATION: Decorations are generally confined to the lip and adjacent lower rim area. Variations of lip treatment with associated features are as follows:

A. Paddle edge or cord-wrapped stick impressed lip. Considerable variations occur within these sherds; however, they all possess a series of transverse or oblique notches made by a cord-wrapped stick across the lip. On many of the sherds the notch is deep while on others there is no notch, only the impressions of the cords. Some lipping occurs on rims where the cord-wrapped stick has been firmly impressed forming a deep notch. Differences also occur in the design according to the closeness of the cords (wide and narrow patterns). See plates VIII and IX.

The rims are generally straight to slightly flaring. On sherds with the oblique lip impressions there occurs considerably more flare to the rim. The lip is generally flattened but may be rounded. Castellations may also occur in conjunction with the notches.

Perforations sometimes occur near the neck area of the vessel, but appendages appear to be absent.

The thickness ranges from 3mm to 9mm with the average of 5.9 to 8mm.

Number of rims—196.

B. Cord-marked lips. On these rims the cord-marking was continued from the body of the vessel over the lip of the rim. The lip is generally flattened but may also be rounded. A small loop handle with incised marks occurred on one vessel. See Plate X.

The sherds range in thickness from 4mm to 9mm with the average of 5.7mm.

Number of rims—41.

C. Incised notched lip. Sherds of this group have had transverse or rarely oblique incised notches cut into the lip. The lip may be flattened or rounded. Punctations below the lip occurred on one rim of this group, and another rim possessed a small lug handle. See Plate XII.

The thickness ranges from 4mm to 8mm with the average of 5.5mm.

Number of rims—25.

D. Plain lips. No decoration of any type was applied to the rims of this group. The lip was smooth and usually flattened, although rounded lips do occur. No appendages were noted for this group. See Plate XI.

The thickness ranged from 4mm to 9mm with the average of 5.7mm.

Number of rims—31.

E. Punctated. A very few sherds had lips decorated with punctations made by reed or sharp stick. The lip was generally flattened.

The thickness ranged from 4mm to 8mm with the average of 6mm.

Number of rims—5.

FORM:	
Rim:	Straight to slightly flaring.
Neck:	Flattened to rounded.
Body:	Elongated globular jar; bowl forms also known; vertical compound, rare.
Base:	Rounded.
Thickness:	Ranges from 3mm to 9mm.
Appendages:	Loop handles and lugs, rare.
DIAGNOSTIC FEATURES:	Paste, surface finish, rim form.
GEOGRAPHICAL RANGE:	Major type at the Johnston site. Occurs on sites in the Monongahela, Allegheny, and Ohio Valleys. This type overlaps with similar Fort Ancient types below the Marietta, Ohio, area on the Ohio drainage. Griffin has defined a geographic variant

(*Keyser Cord-marked*) of this type in the upper Potomac drainage.

PROBABLE RELATIONSHIPS: This pottery type is the most common shell-tempered type found on Late Prehistoric sites in the Upper Ohio Valley. Mayer-Oakes believed this type to show some similarities to the simple "Woodland Cord-Marked" and specifically to *Watson Cord-Marked* which is present in Middle Woodland sites and more closely connected to the early Fort Ancient types such as *Baum Cord-Marked.* Influences from the Iroquois area via the Susquehanna and Potomac drainages are also indicated.

BIBLIOGRAPHY:
Engberg (1930, 1931)
Butler (1939)
Cresson (no date)
Manson, MacCord and Griffin (1943)
Mayer-Oakes (n.d.) Upper Ohio Valley

SAMPLE SIZE: 5960 sherds.

MONONGAHELA PLAIN

These sherds are identical with those of *Monongahela Cord-Marked* with the exception of having a plain or smoother over cord-marked surface. This is a minority type at the Johnston site but appears in greater quantities at early Monongahela sites in the Monongahela valley.

Number of sherds—58.

BIBLIOGRAPHY: Mayer-Oakes (n.d.) Upper Ohio Valley

MONONGAHELA INCISED

The sherds of this type are similar to *Monongahela Plain* with the exception of having the surface decorated with incised lines. The pattern consists of parallel lines which are rectilinear. Sherds of this type were rare at the Johnston site and correlate more closely with Mayer-Oakes' *Monongahela Plain* in distribution. The incising technique is not particularly like the Fort Ancient types, but there are some similarities to *Feurt Incised.* See Plates XIII and IV.

Number of sherds—6.

BIBLIOGRAPHY:
Griffin (1943)
Mayer-Oakes (n.d.) Upper Ohio Valley

McFATE INCISED (tentative)

These sherds are identical with *Monongahela Cord-Marked* except for the addition of incised lines in rectilinear patterns. Mayer-Oakes has tentatively recognized these sherds as belonging to *McFate Incised*. This type is known from the McFate and Westfield sites in the Upper Allegheny drainage but is as yet unknown from the Monongahela and Upper Ohio drainage. The incised patterns rather closely resemble those found on Iroquois pots. The compound pottery vessel of this type shares some similarities to the Baum Component of Fort Ancient and to Andaste and Susquehannock vessels. See Plates XIII, XIV, XV.

Number of sherds—8, 1 whole vessel.

BIBLIOGRAPHY:
Cadzow (1936)
Griffin (1943)
Mayer-Oakes (n.d.) Upper Ohio Valley
Schoff (n.d.) McFate site

DECORATED SHERDS (Type?)

These sherds are identical with *Monongahela Cord-Marked* except for decorations in rectilinear patterns made by a narrow pliable element. Punctations occur in conjunction with the lines on 2 of these sherds. The significance and distribution of sherds having this decoration is as yet unknown for the Upper Ohio Valley. A similar decoration motif occurs on *Potomac Creek Cord Impressed* sherds found at the Keyser Farm, but the surface treatment and temper are quite different. See Plate XIII.

Number of sherds—3.

BIBLIOGRAPHY:
Manson, MacCord and Griffin (1943)

SCAREM PLAIN:

PASTE:
Method of Manufacture: Modeled from a single lump of clay.
Temper: Rarely any intentional temper. Some in-

clusions in the natural clay are apparent. One sherd at the Johnston site contained small amounts of finely crushed shell.

Texture: Irregular.
Hardness: 1.5 to 2.5.
Color: Both surfaces usually light reddish brown; core may be darker.

SURFACE FINISH: Exterior is usually smoothed with some examples showing smoothed-over cord-marking. Interior surfaces are irregular.

DECORATION: Usually confined to the lip or neck. Incised, transverse identations on the lip most common. Incised lines and punctations on body. See Plate XVI.

FORM:
Rim: Moderately outflaring.
Neck: Moderate constriction.
Lip: Rounded to slightly flattened.
Body: Small globular jar or bowl.
Base: Rounded.
Thickness: 3mm to 6mm.
Appendages: None.
Vessel Size: Height 4cm to 6cm; diameter 3cm to 4cm.

DIAGNOSTIC FEATURES: Paste, surface treatment, size.

GEOGRAPHICAL RANGE: Monongahela, Allegheny, and Ohio drainage.

PROBABLE RELATIONSHIPS: This type appears on a number of sites of the Late Prehistoric Period in the Upper Ohio Valley and is related in distribution to the *Monongahela Cord-marked.* Vessels of a similar type occur at Middle Mississippi sites and Fort Ancient sites in the Middle and Lower Ohio Valley. These vessels probably represent items made for or by the children.

BIBLIOGRAPHY:
Engberg (1930, Pl. VIII, 1, 2)
Mayer-Oakes (1954 b.)
Black (1944)

SAMPLE SIZE: 16 sherds.

WATSON CORD-MARKED

PASTE:
Method of Manufacture: Coiled, malleated with a cord-wrapped paddle.
Temper: Crushed fragments of limestone which have leached out in acid soil leaving angu-

	lar holes.
Texture:	Generally compact.
Hardness:	2.5 to 3.5.
Color:	Tan to yellow-gray on both surfaces.
SURFACE FINISH:	Exteriors have the impressions of a cord-wrapped paddle. The interior surfaces are smoothed.
DECORATION:	Rare; when present it is confined to the lip and consists of cord-wrapped paddle impressions. See Plate XVII.
FORM:	
Rim:	Straight to slightly flaring.
Lip:	Flattened to rounded.
Body:	Globular.
Base:	Rounded?
Thickness:	Ranges 5 mm to 9 mm.
Appendages:	Unknown.
DIAGNOSTIC FEATURES:	Paste, surface, finish, rim form, color.
GEOGRAPHICAL RANGE:	This type is known particularly from the Ohio Valley proper; but some examples of it have been found in the Monongahela, Allegheny, Youghiogheny, and Mahoning Valleys.
PROBABLE RELATIONSHIPS:	This pottery appears as a minority type at the Johnston site but is quite common on sites of the Middle Woodland period in the Upper Ohio proper where it appears to be the basic utilitarian pottery. It is similar to some Hopewellian pottery and may represent a carry-over into Late Prehistoric times.
BIBLIOGRAPHY:	Fetzer and Mayer-Oakes (1951) Mayer-Oakes (n.d.) Sayre Mayer-Oakes (n.d.) Speidel
SAMPLE SIZE:	54 sherds.

WATSON PLAIN

	This type is represented by only 8 sherds at the Johnston site. It is similar to *Watson Cord-Marked* in all features except the plain surface.
BIBLIOGRAPHY:	Mayer-Oakes (1954 a.)

MAHONING CORD-MARKED

PASTE:	
Method of Manufacture:	Coiled, malleated with a cord wrapped paddle.

Temper:	Crushed fragments of rock, predominately granite or other igneous rock and sometimes quartz. The temper fragments are small to moderate in size and makeup from 25 to 50% of the paste.
Texture:	Compact and regular except for a few heavily tempered sherds which are quite friable.
Hardness:	Ranges from 2.5 to 3.5.
Color:	Both surfaces range from tan and grey to black.
SURFACE FINISH:	The exterior surface is characteristically cord-marked. The interior is smooth.
DECORATION:	No decorations of any type occurred on the body or rim of the sherds in this sample.
FORM:	
Rim:	Slightly flared.
Neck:	Some constriction.
Lip:	Rounded to slightly flattened.
Body:	Unknown, but probably globular.
Base:	Unknown, but probably rounded.
Thickness:	Ranges 4mm to 9mm, averaging about 6mm.
Appendages:	Unknown.
DIAGNOSTIC FEATURES:	Paste, especially temper and surface treatment.
GEOGRAPHICAL RANGE:	This type is quite minor at the Johnston site and appears to be related to what Griffin has called "Woodland Cord-Marked." The position and importance of this type in the Upper Ohio Valley has yet to be thoroughly defined.
BIBLIOGRAPHY:	Griffin (n.d.) (Sugar Run) Mayer-Oakes (n.d.) Upper Ohio Valley
SAMPLE SIZE:	95 sherds.

HALF-MOON CORD-MARKED

PASTE:	
Method of Manufacture:	Coiled, malleated with a cord-wrapped paddle.
Temper:	Predominantly coarsely crushed fragments of granite or other igneous rock, but chert and limestone may be used. The temper fragments are large and makeup from 45 to 75% of paste.

Texture:	Irregular and somewhat friable.
Hardness:	Ranges from 2.0 to 3.5.
Color:	Both surfaces are tan to buff colored.
SURFACE FINISH:	The exteriors are cord-marked with irregular impressions. The interiors show impressions of a cord-wrapped paddle and plain plaited fabric. Only 4 sherds of this sample have smooth interiors. See Plate XVIII.
DECORATIONS:	None.
FORM:	
Rim:	Straight.
Neck:	Unknown, probably straight.
Lip:	Rounded.
Body:	Unknown, probably globular.
Base:	Unknown, probably flat.
Thickness:	Ranges from 5mm to 11mm, averaging 7.8mm.
Appendages:	Lug handles.
DIAGNOSTIC FEATURES:	Paste, thickness, and surface treatment.
GEOGRAPHICAL RANGE:	This type is mainly concentrated in the Ohio Valley proper, but some samples are known from the Monongahela, Beaver, and Allegheny Valleys.
PROBABLE RELATIONSHIPS:	This type appears to represent an early occupation at the Johnston site. It is the basic Early Woodland pottery of the Upper Ohio Valley and is definitely associated with village and mound sites commonly associated with Adena in the area. This type has similarities with Baumer, Crab Orchard, and Fayette thick of the middle and lower Ohio Valley.
BIBLIOGRAPHY:	Fetzer and Mayer-Oakes (1951) Maxwell (1951) Ritchie and MacNeish (1951)
SAMPLE SIZE:	41 sherds.

FLINT AND STONE WORK

The flint and stone work found at the Johnston site consisted mainly of utilitarian objects. Hammer stones and stones pitted on one or both sides were abundant. None of these, however, had been especially fashioned for the purpose, but were merely easily accessible stones of the proper size and shape. Several well made celts and adzes of diorite and hematite and a number of fragments found in the excavations and in the Edward Johnston collection were the major heavy stone implements. These tools were well polished and possessed a keen cutting edge. No grooved axes were found, but two adzes with grooves have come from the site. Hematite appears to have been the favored material for these implements. See Plate XX.

Several small stones and two large stones showing evidence of having been used for grinding implements were uncovered in the excavations. These were generally of sandstone and possessed broad areas of abrasion. A large flat piece of sandstone containing multiple pits on both surfaces was found in one of the storage pits.

Discoidals have been found at the Johnston site, but they do not appear to have been common since none were uncovered during the excavations. The best example of this type of object was in the collection of the former owner of the site.

Polished stone balls appear to have been quite common. Six stone balls (1 of quartzite, 1 of hematite, and 4 of sandstone) were found in the excavations and several were seen in local collections from the site. These balls range from 1 to 1½ inches in diameter. The ones made of igneous stones and hematite show a high degree of polish where those of sandstone are only smooth. See Plate XXI.

Two pipes of stone were found in the excavations and portions of five others were seen in the Johnston collection. One of these pipes had been made of quartzite while the others were of limestone and slate. All of the pipes consisted of bowls only. The stem had been separate and probably made of bone or wood. Three of these pipes are vase-shape while three are of the elbow type with a right to obtuse angle. Only one pipe of sandstone had any form of decoration, and this consisted of a series of drilled holes around the bowl in conjunction with incised lines which ran obliquely from the holes to the rim of the bowl.

Three pieces of cannel coal which had been worked were found. One of these was roughly in the shape of a pendant while another was discoidal in shape. The third piece showed some polishing but didn't appear to have been worked into any particular form.

The triangular projectile point appears as the major type. Generally they are quite small (½ to 1 inch in length) and range from a narrow base to equilateral. Stemmed, corner, and side-notched projectile points occur, but they represent a minority at the site. Several large and rather crudely finished broad-stemmed and expanded-stemmed points may possibly belong to the earlier occupation represented by the thick, crude pottery. A number of large blades which were used as knives have been found at the site. Drills of both the expanded base and straight types were common. See Plate XXII.

The flint and stone implements at the Johnston site closely parallel the materials found at other Late Prehistoric sites in the Upper Ohio Valley. There appears to be no great variety, and what does occur is mostly of a utilitarian nature.

BONE AND SHELL WORK

The bone artifact most frequently found during the excavations was the bone bead. Around the legs of Burial #10 over fourteen hundred bone beads were found and they were common in the village debris. Generally they range in length from ¼ to 1 inch in length and from ¼ to ¾ of an inch in diameter. They are most commonly made from bird long bones or the split cannon bone of the deer. Several worked bird bones (usually wild turkey) ranging in length from 2¾ to 5¾ inches appear to have been the raw material from which the small beads were fashioned. The digit bones of the wild turkey, the canine teeth of the bear and the dog, the incisors of the beaver, and the molars of the bear also appear to have been favorite materials for beads and pendants. The cylindrical beads of birds or deer bone were usually well smoothed at the ends, and many had acquired a high polish from handling.

Awls were usually made from sections of animal long bones or from the scapulae of the deer and elk. The points were usually neatly finished, but the butt ends were seldom finished or polished. Two beautifully polished awls made from the penis bone of the bear were found. These measured approximately 5 inches in length. The bone awls ranged in length from 1 to 5½ inches in length. See Plate XXIII.

A number of used deer and elk antler tips were found. These may have been used for the flaking of flint or as punches. The typical cylindrical antler drifts which are commonly believed to be flaking tools were also present.

Antler tips, hollowed in the center and used as arrow points, were present but not in any great number. The flint projectile points appear to have been the preferred type.

A large chisel or gouge had been made from the basal section of an elk antler. This object measures 6 inches in length and nearly 2 inches in width and has a nicely polished bit. Also from antler is a polished section 4 inches long and 1 inch in diameter with a blunt end which appears to have been used as a smoother. See Plate XXIV.

Of particular interest is a worked bone tube some 5½ inches long and ¾ inch in diameter made of the femur of a large bird. The tube is highly polished and has a worn band ½ inch in width approximately 1 inch from each end. These bands seem to indicate areas of attachment for thongs or woven strings. The tube was found near the center of the back of Burial #10 and probably was attached to the hair.

Two finely made fishhooks were found during the excavations. Both appear to have been made from the long bones of the deer since a blank indicating the beginning of a fishhook was found in that type of bone. See Plate XXV.

Several fragments of worked and scratched turtle shell were found in the excavations. Some of these possessed a high polish. The shell was too fragmentary to reconstruct any definite object, but some pieces may represent turtle shell cups. The common box turtle shell was the type used in all cases.

Objects of shell at the Johnston site were not abundant, although shells of the common mussel were frequently found in the refuse pits. Ornaments made principally from the native mussel shell were perforated discs of about ¾ inch in diameter and small, perforated, pendant-shape, imitation elk teeth beads.

The most important shells to these people were the imported shells from the Gulf of Mexico and particularly the species *Marginella apicina*. Beads made from the small shells of this species were found with two of the burials. These beads are quite simple and unimportant in themselves, but they imply extensive trade relationship of this area with the south.

As was the case with the flint and stone work, the bone and shell work was generally confined to a utilitarian purpose. When ornaments were made, they were quite simple and few in number. This same situation appears to exist at most Late Prehistoric sites in the Upper Ohio Valley.

TRAITS OF THE JOHNSTON SITE

In Columns I and II of the following list are the traits present or indicated at the Johnston site. The actual number of specimens known from the excavations and the examination of local collections is given whenever possible. Structural features of the village and objects indicated by only fragments are marked with a cross in Column II. In Column III are listed the traits at Johnston which also occur on the general Monongahela complex frequency trait list compiled by Mayer-Oakes (n.d. Upper Ohio Valley). In Column IV is listed the possible affinity of traits found at the Johnston site which do not appear to be related to the general Monongahela Complex but appear to belong to one or more earlier occupations of the same area.

I JOHNSTON	II NUMBER	III MONONGAHELA	IV OTHER
Antler			
1. Conical projectile point	7	Freq.	
2. Flaker	12	Com.	
3. Drift	6	Freq.	
4. Worked tine	12	Freq.	
5. Smoother	1		
6. Chisel	1		
Bone			
7. Bird bone bead	1474	Com.	
8. Mammal bone bead	2	Rare	
9. Beadstock	3	Freq.	
10. Bone tube	1		
11. Awl, splinter	22	Com.	
12. Awl, deer scapula	2		
13. Awl, bear penis bone	2		
14. Awl, turkey joint	2	Com.	
15. Cup, turtle carapace	X	Freq.	
16. Fishhook	2	Freq.	
17. Bear Canine, cut	2	Freq.	
18. Tooth pendant, grooved	1	Freq.	
19. Pendant, turkey digit	1	Freq.	
20. Chisel, beaver incisor	2		
21. Pin, notched	3		
Cannel Coal			
22. Cannel coal, sphere	1		
23. Cannel coal, worked	2	Freq.	
Flint			
24. Projectile point, triangular	341	Com.	
25. Projectile point, stemmed	34		E. Woodland
26. Projectile point, corner-notched	25		E. Woodland
27. Projectile point, side-notched	31		E. Woodland
28. Drills, expanded base	17		

JOHNSTON	NUMBER	MONONGAHELA	OTHER
29. Drills, straight	9		
30. Blades	12		
Pottery			
31. Monongahela Cord Marked	5929	Com.	
32. Monongahela Plain	58	Freq.	
33. Monongahela Incised	6	Rare	
34. "McFate Incised"	9		
35. Scarem Plain	16	Freq.	
36. Watson Cord Marked	54		Middle Woodland
37. Watson Plain	8		Middle Woodland
38. Mahoning Cord Marked	95		
39. Half Moon Corn Marked	41		E. Woodland
Pottery Pipes			
40. Cord-Impressed (Monyock) elbow	3	Freq.	
41. Plain (Monyock) elbow	2	Freq.	
Stone			
42. Sandstone abrader	3	Freq.	
43. Smoothing stone	11		
44. Grinding stone	4		
45. Hammerstone	27		
46. Bi-pitted stone	9		
47. Multi-pitted stone	3		
48. Celts, round polled	4	Com.	
49. Celt, narrow polled	7		
50. Adze, plain	3		
51. Adze, notched	2		
52. Discoidal, perforated	1	Rare	
53. Discoidal, rough	5	Freq.	
54. Stone balls	12		
55. Pipe, elbow, plain	1	Rare	
56. Pipe, elbow, decorated	2		
57. Pipe, vasiform	4	Rare	
Shell			
58. Bead, short cylinder	147	Rare	
59. Bead, long cylinder	8	Rare	
60. Bead, disc	5	Freq.	
61. Bead, *Marginella*	13	Rare	
62. Pendant, imitation elk canine	6	Rare	
Structures			
63. Oval stockade	X	Com.	
64. Parallel stockade	X		
65. Exterior projection on stockade wall	3		
66. Ditch interior to stockade wall	X		
67. Round house	8	Freq.	

JOHNSTON	NUMBER	MONONGAHELA
68. Platforms inside of house	X	
69. Storage structure connected to house	3	
70. Houses arranged in a circle inside of stockade	X	
71. Storage pit, post lined, pear-shaped	7	Rare
72. Refuse pits	X	Com.
73. Refuse pit inside of house	X	
74. Refuse in stockade ditch	X	
75. Overlapping refuse pits	X	
76. Fire pit, round	X	Com.
77. Fire pit, round, containing stones	2	
78. Fire pit inside of house	X	
79. Plaza area in center of village	X	
Burial Traits		
80. Flexed burial	15	Com.
81. Extended burial, child	2	Rare
82. Multiple burials	2	
83. Burial in shallow oval pit	6	
84. Burial in refuse pit	5	
85. Burial in stockade ditch	4	
86. Burial in storage structure	1	
87. Stone lining in grave	1	Rare
88. Artifacts with burials	2	
89. Pottery as grave goods	1	
90. Fire above burial in grave	2	

Interpretive Summary of Traits

Many of the traits of the Johnston site do not appear on the Monongahela Complex trait list compiled by Mayer-Oakes since that list was based on test excavations, observations of small surface collections, and information contained in unpublished reports of work done by the W. P.A. Mayer Oakes included only traits which he believed to be unquestionably Monongahela Complex. Many of the traits found in W.P.A. excavations (Cresson, n.d.) were doubtful as to affinity since several sites having obvious time differences had been lumped together for analysis. A recent study by Mayer-Oakes (n.d. Upper Ohio Valley) has clearly shown a number of temporal differences within the pottery types among Monongahela sites, and it is suspected that equal differences exist in respect to stone, flint, bone, and structural features.

There are forty-two traits shared by the Johnston site with the general Monongahela Complex list of sixty-seven traits. These shared traits also appear as those most diagnostic in establishing Monongahela as a separate cultural unity. Many of the traits at Johnston which are not listed in the Monongahela list have been reported from sites generally considered as Monongahela (Cresson, n.d.) or are of such a general nature as to have a wide distribution in time and space.

The most distinctive items at the Johnston site which correlate with the Monongahela are: (1) The oval or round stockade surrounding a village composed of round houses and with an open plaza in the center is common in Monongahela and characterizes most Late Prehistoric sites in the Eastern United States. The presence of parallel stockades and associated interior ditches is not common in Monongahela sites in the Monongahela Valley, but both occur at the McFate site (Schoff, n.d.) in the Upper Allegheny Valley, and ditches occur at sites in New York (Ritchie, 1937). The semi-circular projections to the stockade wall are a unique feature of the Johnston site and are unknown from other Monongahela sites. The post-lined pear-shaped storage structure which is often attached to the house appears as a distinctive Monongahela trait. (2) The burial customs at the Johnston site conform in all major features with those from other Monongahela sites, the flexed burial with little or no burial goods being most common. (3) The stone implements conform generally to those known from other Monongahela sites. Traits 43-47 on the list are general and have a wide distribution in time. The notched adze is rather unusual but has occurred on at least one other Monongahela site (Mayer-Oakes, 1954a). (4) The small triangular point is the major type at Johnston and at all Monongahela sites from which sufficient information is available. The range of projectile point types for the Monongahela Complex is not well known, but traits 25-27 at the Johnston site appear to represent an early occupation. (5) The majority of bone objects at Johnston have their counterpart at other Monongahela sites. Many of these traits are known from earlier cultures, but the intensive use of bird bone for beads is a quantitatively distinct Monongahela trait. (6) The most distinctively Monongahela item at Johnston is the shell-tempered pottery. The limestone-tempered pottery does not appear to be a Monongahela trait since it is most commonly associated with Middle Woodland sites. There is, however, some evidence of contact between peoples using limstone-tempered pottery and those making the earliest shell-tempered pots. On the basis of a seriation study made by Mayer-Oakes (n.d. Upper Ohio Valley) the Monongahela pottery types found at Johnston would fall rather late and thus probably never in direct contact with users of the limestone-tempered pottery.

The contention that the limestone-tempered pottery is earlier than the Monongahela occupation at Johnston is also supported by the presence of heavy grit-tempered pottery which has been shown stratigraphically to be the earliest pottery ware in the Upper Ohio Valley (Mayer-Oakes, n.d. Upper Ohio Valley). It has also been demonstrated from the same stratigraphic tests that the limestone-tempered pottery was co-existent with late phases of the use of heavy grit-temper and that it became the dominant ware by Middle Woodland times. The heavy grit-tempered and limestone-tempered pottery would appear to antedate the Monongahela occupation at the Johnston site by as much as 2000 years.

The stemmed, corner-notched, and side-notched projectile points (traits 25-27) found at the Johnston site are generally of an Early Woodland type. These objects and the grit and limestone-tempered pottery have been found over a wider area than the Monongahela occupation. No features of this occupation were found during the excavations, but objects generally associated with this early occupation were more commonly found on the west side of the stockade-enclosed Monongahela village. A possible concentration of this material was found in a drainage ditch some distance west of the Monongahela remains.

SUMMARY

The Johnston site had been a fortified village surrounded by a parallel stockade which protected the inhabitants from the elements and from the attacks of marauding bands of hostile groups. The partial remains of a third and possibly a fourth stockade were found. It appears that when a stockade had become weakened by age, it had to be replaced by a new structure that was often made larger to accommodate an increasing population. Inside this protective wall the people constructed their homes and lived their lives, venturing outside of it only to till their fields, to fish, and to hunt.

Around the inside of the stockade the people built their houses in a somewhat smaller circle. The central part of the village appears to have been an open plaza where many of the social activities took place. The typical house was a circular structure some 20 feet in diameter, made of slender saplings placed in the ground and arched to the center of the house where they were tied. The framework was then covered with bark and skins. Inside the house was a fire pit for cooking and warmth. Near the inner walls were found remains of small structures which may represent low platforms used for beds. Attached to the house was an enclosed pear-shaped pit that served as a storehouse for food. The staple food of these people appears to have been maize grown on small fields cleared from the forest outside of the village. Added to this were fish and mussels from the streams, and meat supplied by the abundant animal life of the area. Animal bones and other refuse from daily life were buried in garbage pits dug throughout the village and in the floors of the houses. From the study of these bones we find that the deer and elk were favorite items on the menu.

For cooking and storing food, pottery vessels were made of clay tempered with crushed mussel shells. These vessels were made in a number of forms, the most common being an elongated globular pot shape. From pottery clay were fabricated elbow pipes in which native tobacco was smoked. Miniature vessels were made for the children, and clay balls about the size of marbles may have been used in some type of game.

From flint the people made small triangular arrowpoints, scrapers, drills, and knives. Stone was used for ungrooved axes, hammers, anvils, and mortars. Awls, fishhooks, pendants, and beads were made from animal bones and teeth. Many useful objects were undoubtedly made of wood but, unfortunately, climatic conditions of the area were not conducive to the preservation of such objects.

What do we know about the people and their customs? It is quite difficult to reconstruct the social life and beliefs of a people from objects, but a study of burial methods and human remains offers many insights into these phases of human life. At the Johnston site seventeen burials of men, women, and children were found in the areas excavated. There seems to have been no particular fear of the dead, for the burials were made within the village and near the dwellings. The body was customarily flexed on its side in a shallow pit no larger than necessary to receive the remains. Only on rare occasions were objects placed with the body.

The most spectacular burial was that of a woman and a child in the same grave. Around the waist and legs of the woman were over fourteen hundred bone beads that had been sewed onto a skirt probably made of buckskin. Encircling the neck of each skeleton was a small necklace of shells of the species *Marginella apicina* taken from the waters of the Atlantic or the Gulf of Mexico. These shell beads indicate that the people were in touch with their neighbors and on established trade routes from distant areas. Included with these burials was an unusual compound pottery vessel, which also points to contacts outside of the immediate area. The only other object found with a burial was a shell necklace around the neck of an infant.

Study of the skeletons indicates that the people were rather well-proportioned and of medium stature. It is difficult to determine their head form because of deformation. The backs of the adult skulls show a marked flattening. This may have been caused by the practice of strapping the infants onto a cradle board. It is well known that some groups intentionally deformed their skulls as a sign of beauty. The number of adult individuals from the site was far too small a sample to permit any definite conclusions concerning this custom.

The rate of infant and child mortality was high, since ten such immature skeletons were found as compared to seven adults. There is some indication of disease in epidemic form, as multiple burials were found in a single grave. One grave contained the skeletons of three small infants. Disease often caused deformities of the bones, and the teeth of nearly all the skeletons contained cavities. From this evidence it appears that the diet and sanitary conditions were none too good. It is not difficult to imagine this when the small houses, numerous garbage pits outside and within the houses, and the many shallow human burials within the village are considered. The stench of such a town must have been terrific on a hot summer day.

How long was the village inhabited? The number of burials uncovered and an estimate of those probably to be found in unexcavated parts of the village would denote a relatively long occupation by a group ranging probably from one hundred and fifty to two hundred and twenty-five individuals. However, the most reliable indicators of long occupation are the multiple stockade lines, overlapping house patterns, burials intrusive into preceding structures, and the great multitude of post-molds covering the site and pointing to building and rebuilding. All this evidence signifies an occupation of at least 25-50 years.

Finally, who were these people and when did they live? Archeologically speaking, they belonged to the Monongahela cultural groups of the Mississippi pattern of Late Prehistoric times. Available evidence discloses that there was an intrusion of Mississippi culture from the Lower Ohio Valley into this area for a period of several hundred years before the coming of the Europeans late in the seventeenth century. This influence represents a Middle Mississippi offshoot which merged culturally with basic Woodland groups already present. The resulting culture was in many ways quite similar to Fort Ancient of Ohio except that the Mississippi influence was more sharply curtailed by pressure of the Iroquois from the northeast and the pressure of the Europeans on the Indian tribes of eastern Pennsylvania and Virginia. Sites from the beginning of this intrusion to its dominance at early historic times have been found in southwestern Pennsylvania. The Johnston site appears to have been in existence during the late period (1550-1600) of Mississippi influence on the basis of pottery types and the lack of evidence for historical contacts. For reasons which are as yet not clear, this site was abandoned and the people in all probability were living at a new location when the Europeans entered the area.

Colonial history tells us that while the Iroquois claimed overlordship of southwestern Pennsylvania during the seventeenth and eighteenth centuries, it was actually occupied by the Delawares and Shawnees. The suggestion has been made that the Shawnee were responsible for villages like the one under discussion but as yet this has definitely to be proved. (Webb, Baby and Griffin, 1952, p. 194)

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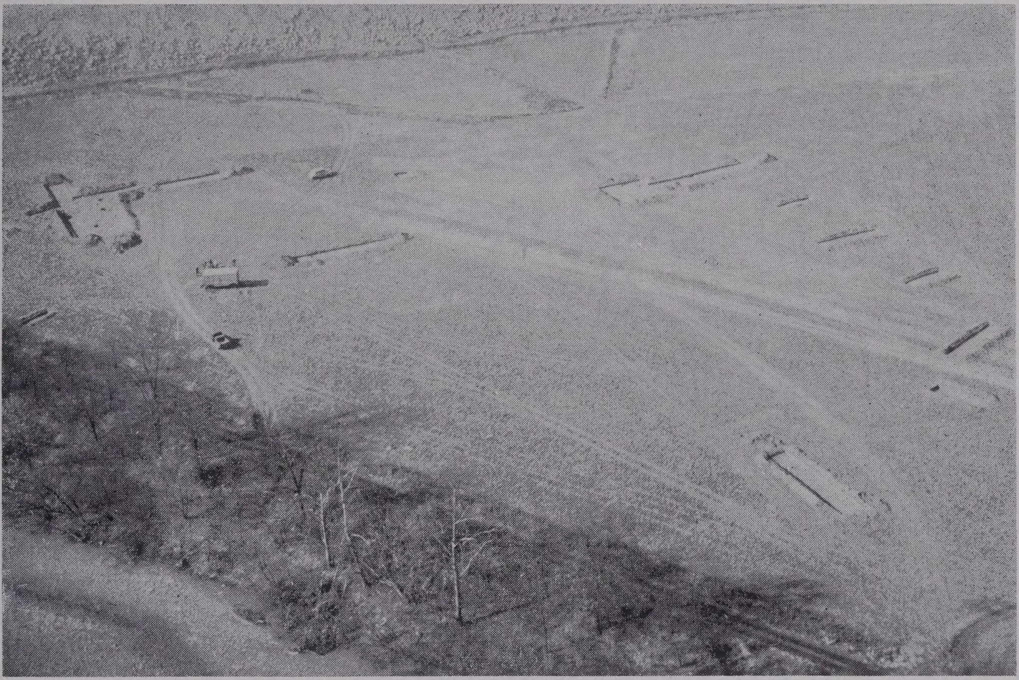
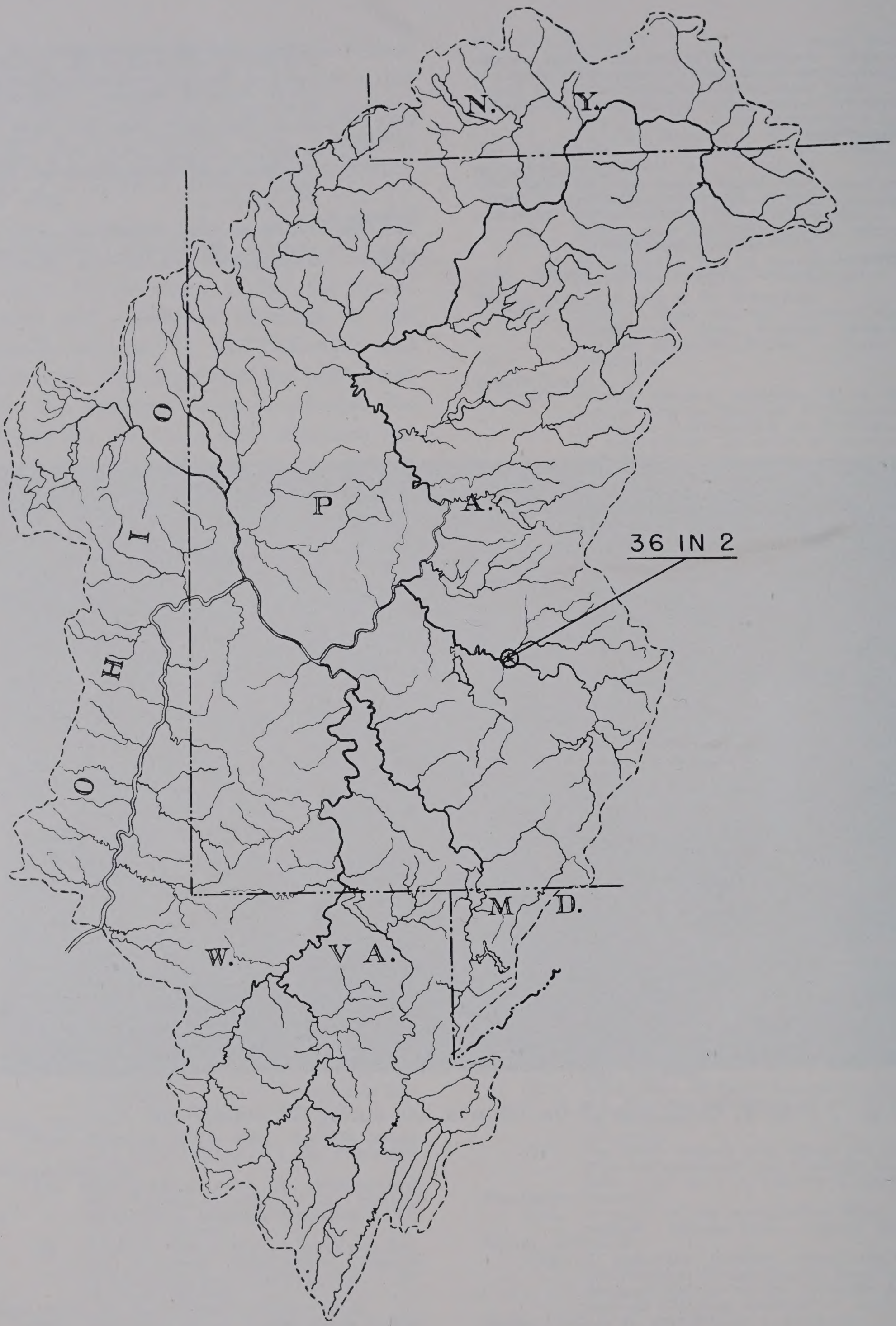


Plate I. Aerial view of the Johnston site during the excavations.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36 IN 2
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W. V A.

Fig. 1. General location of the Johnston site in the Upper Ohio Valley.

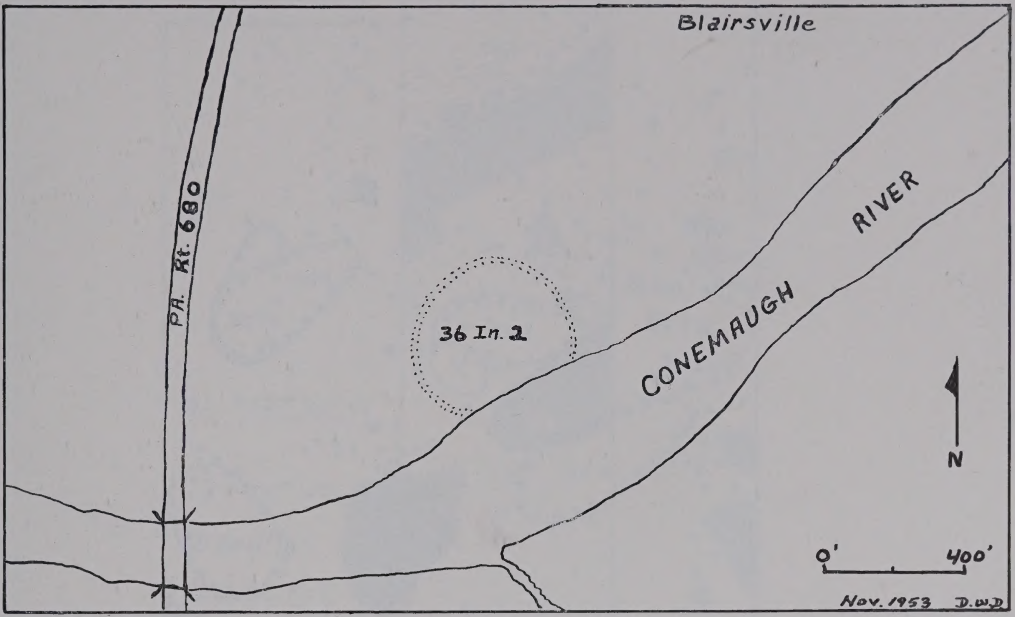
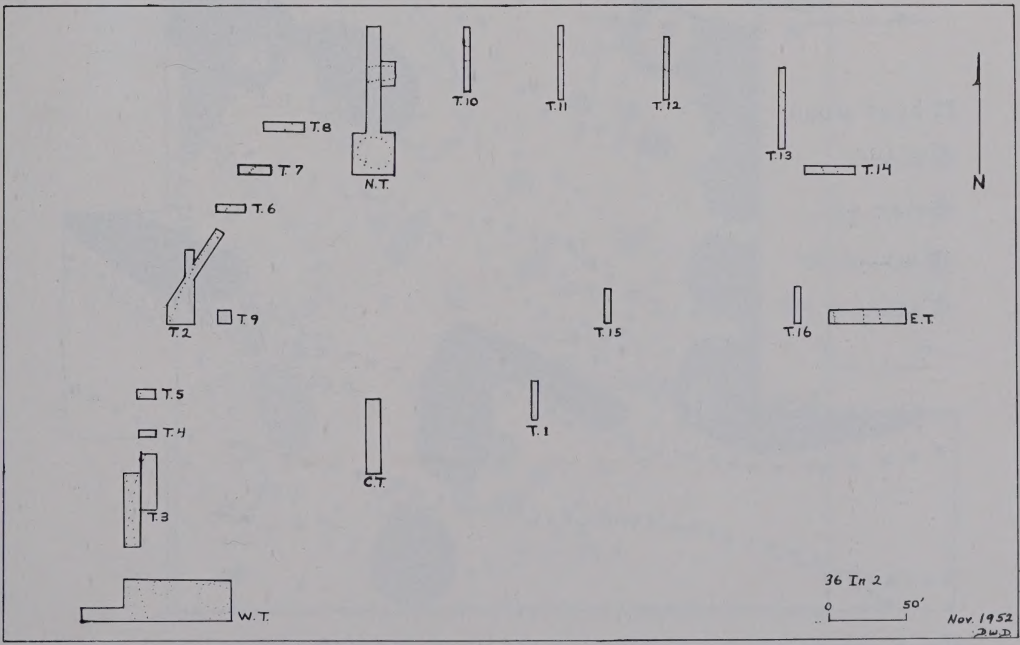

Blairsville
PA. Rt. 680
36 In. 2
CONEMAUGH RIVER
N
0'
400'
Nov. 1953 D.W.D.

Fig. 2. Location of the Johnston site in relation to the Conemaugh River and Pennsylvania Rt. 680.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T.11
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T.15
T.16
E.T.
T.5
T.4
T.1
C.T.
T.3
W.T.
36 In 2
0
50'
Nov. 1952
D.W.D.

Fig. 3. The relationship of the areas excavated at the Johnston site.

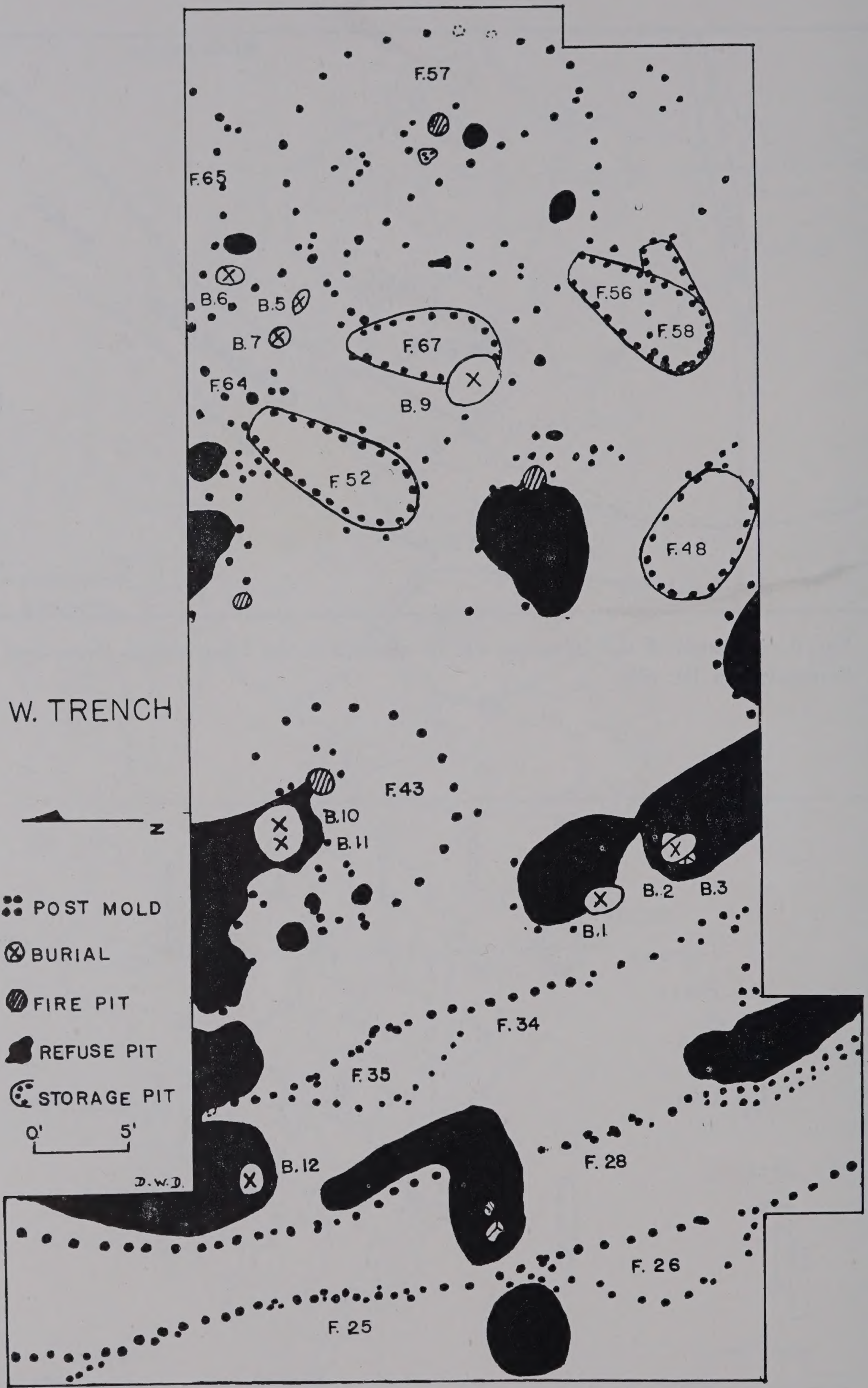

F.57
F.65
B.6
B.5
B.7
F.64
F.67
B.9
F.56
F.58
F.52
F.48
W. TRENCH
N
POST MOLD
BURIAL
FIRE PIT
REFUSE PIT
STORAGE PIT
0'
5'
D.W.D.
F.43
B.10
B.11
B.2
B.3
B.1
F.34
F.35
F.28
B.12
F.26
F.25

Fig. 4. Major features uncovered in the excavation of the West Trench area shown in Fig. 3.

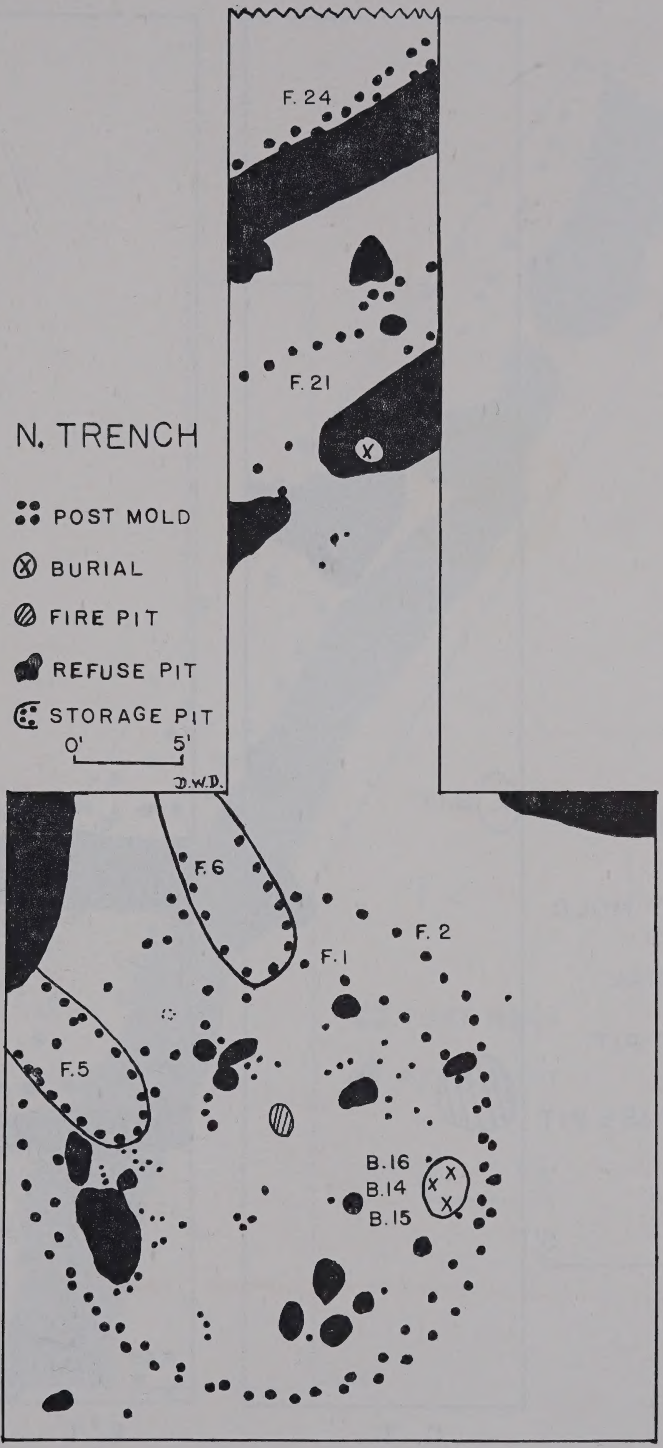

F. 24
F. 21
N. TRENCH
POST MOLD
BURIAL
FIRE PIT
REFUSE PIT
STORAGE PIT
0'
5'
D.W.D.
F. 6
F. 2
F. 1
F. 5
B. 16
B. 14
B. 15

Fig. 5. Major features found in the excavation of the North Trench area shown in Fig. 3.

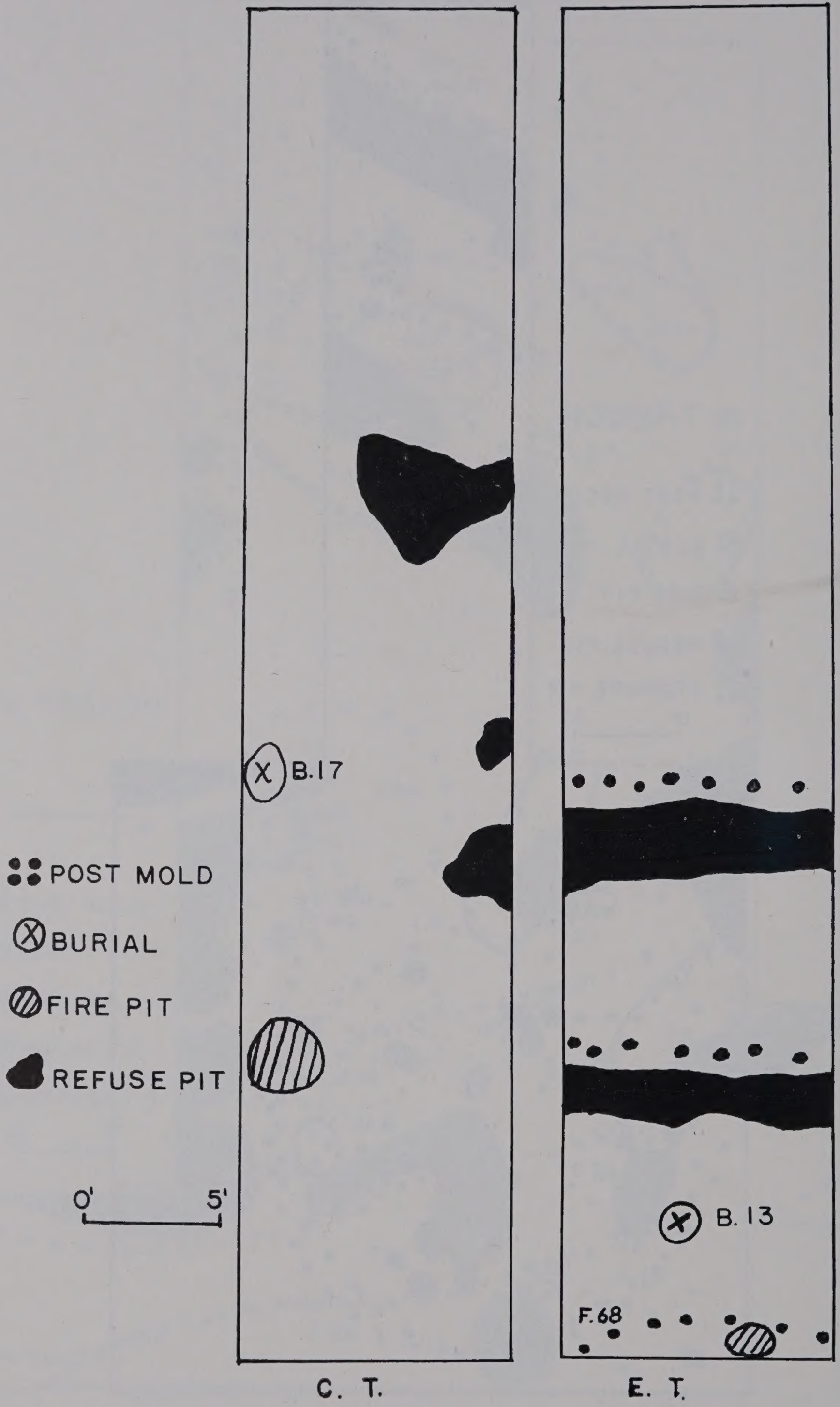
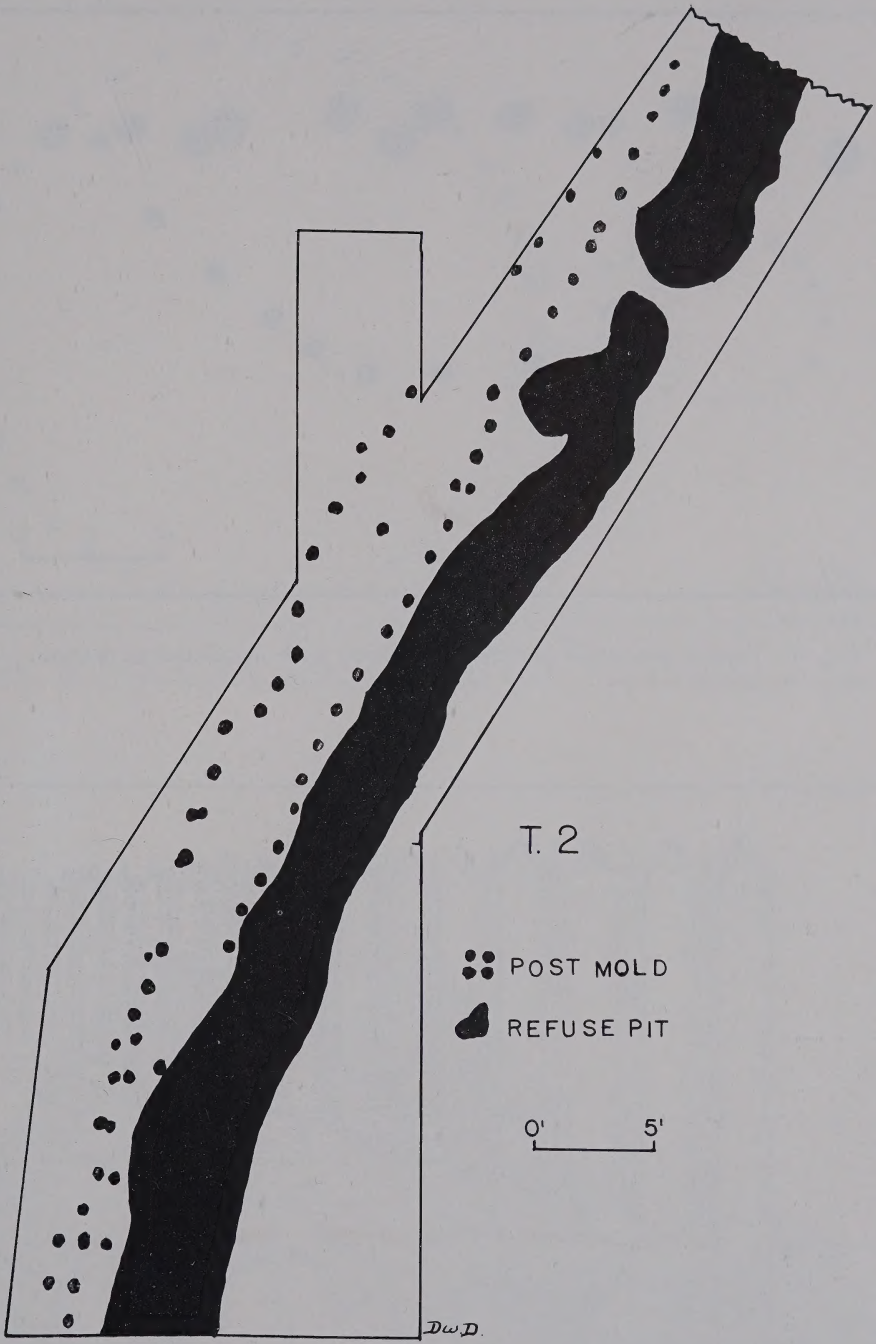

B.17
POST MOLD
BURIAL
FIRE PIT
REFUSE PIT
0'
5'
B. 13
F.68
C. T.
E. T.

Fig. 6. Features found in the Central and East Trenches shown in Fig. 3.


T. 2
POST MOLD
REFUSE PIT
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DwD.

Fig. 7. Trench No. 2 showing the initial stockade and ditch found in the July 1952 excavations.

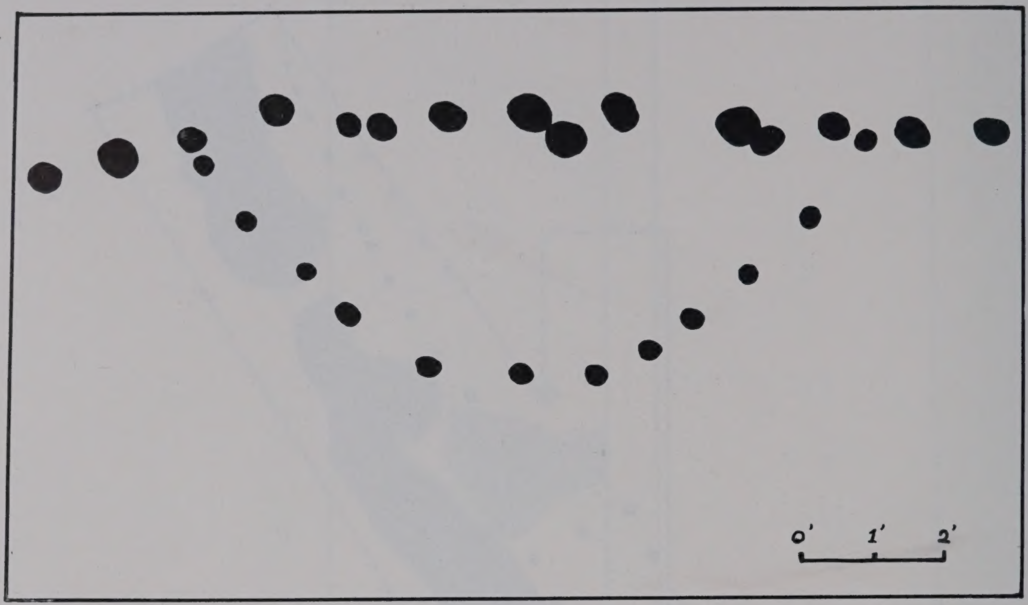

Fig. 8. Typical post-mold pattern of stockade with associated projection.

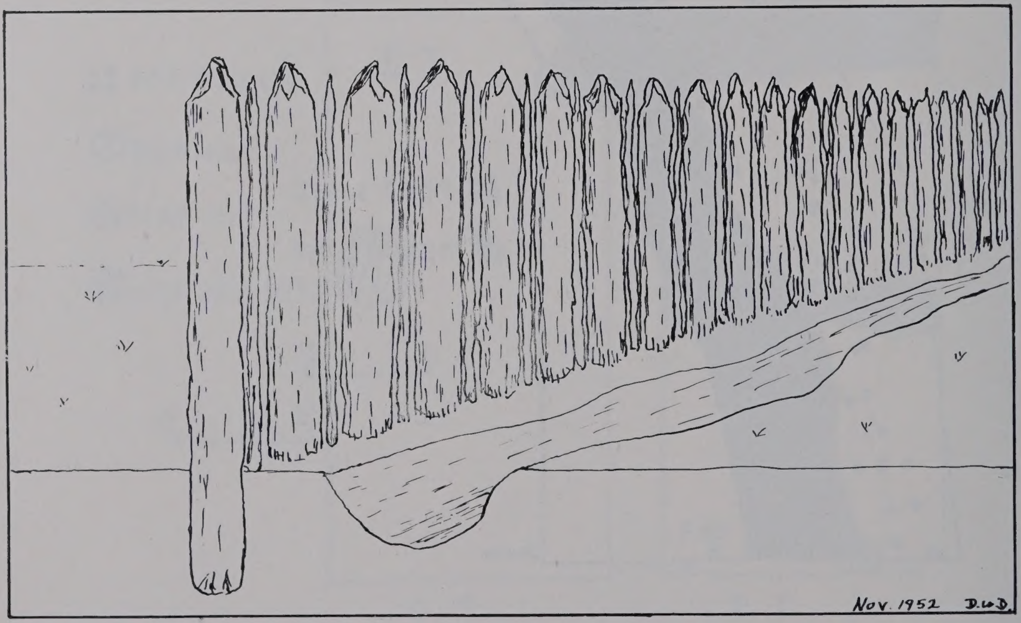
Nov. 1952 D.W.D.

Fig. 9. Schematic reconstruction of stockade and associated ditch.

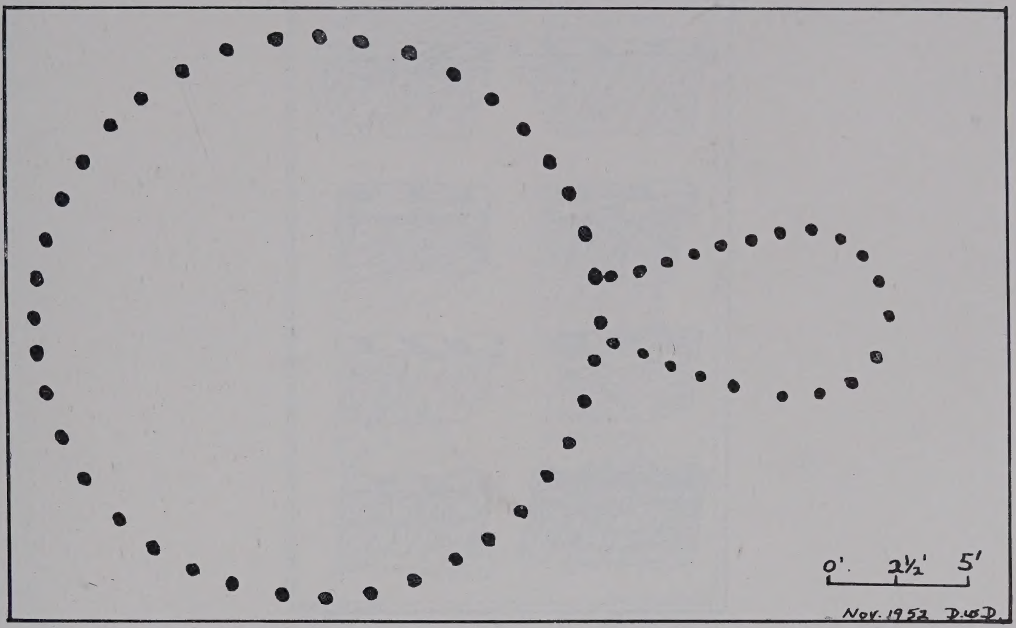
0'. 2½' 5'
Nov. 1952 D.W.D.

Fig. 10. Typical post-mold pattern of house and connected storage structure.

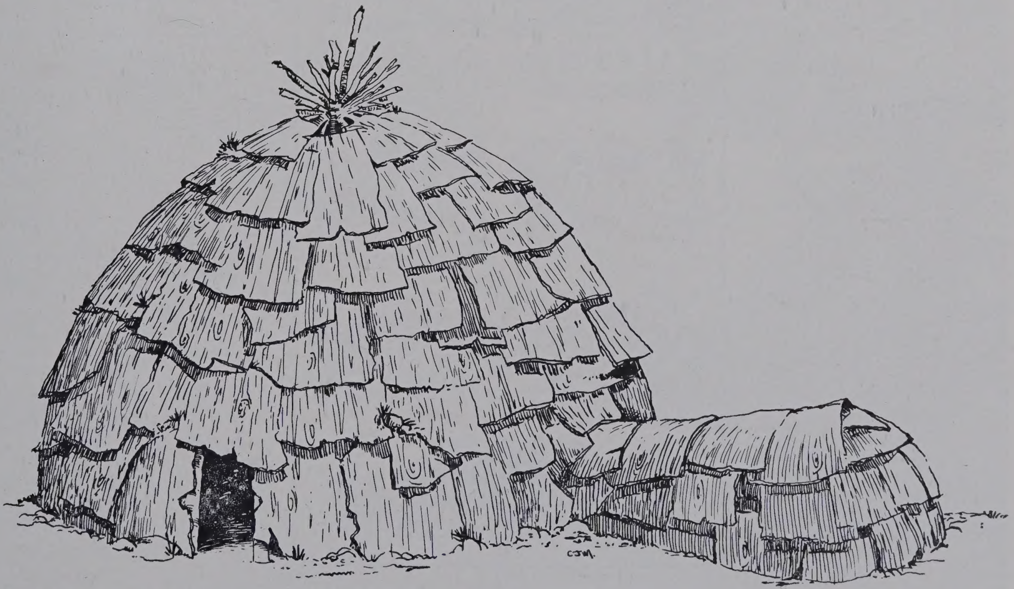

Fig. 11. Reconstruction of house and storage structure.

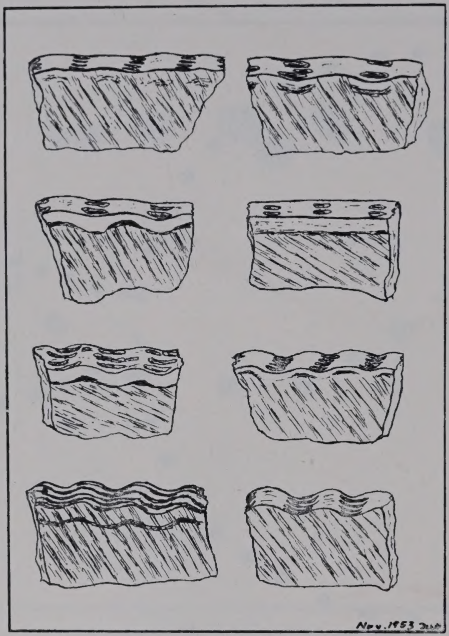

Fig. 12. Monongahela Cord Marked pottery, variations among cord-wrapped stick impressed lips.

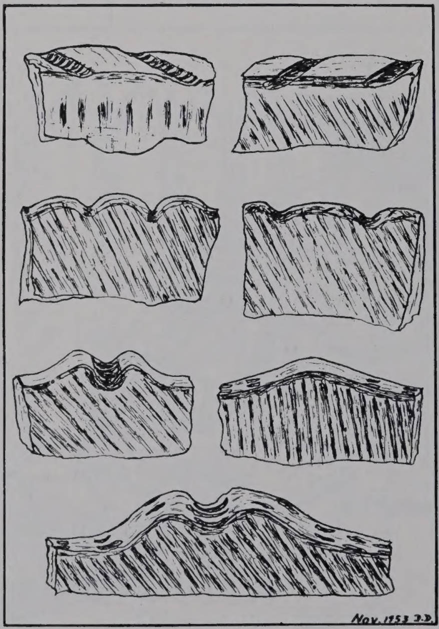

Fig. 13. Monongahela Cord-Marked, cord-wrapped stick impressed lips and castellations.

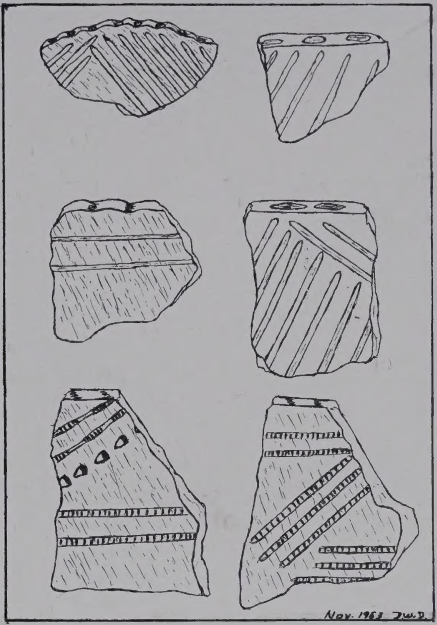
Nov. 1963 J.W.D.

Fig. 14. Monongahela Incised (plain surface) and McFate Incised (cord-marked surface) decorations.

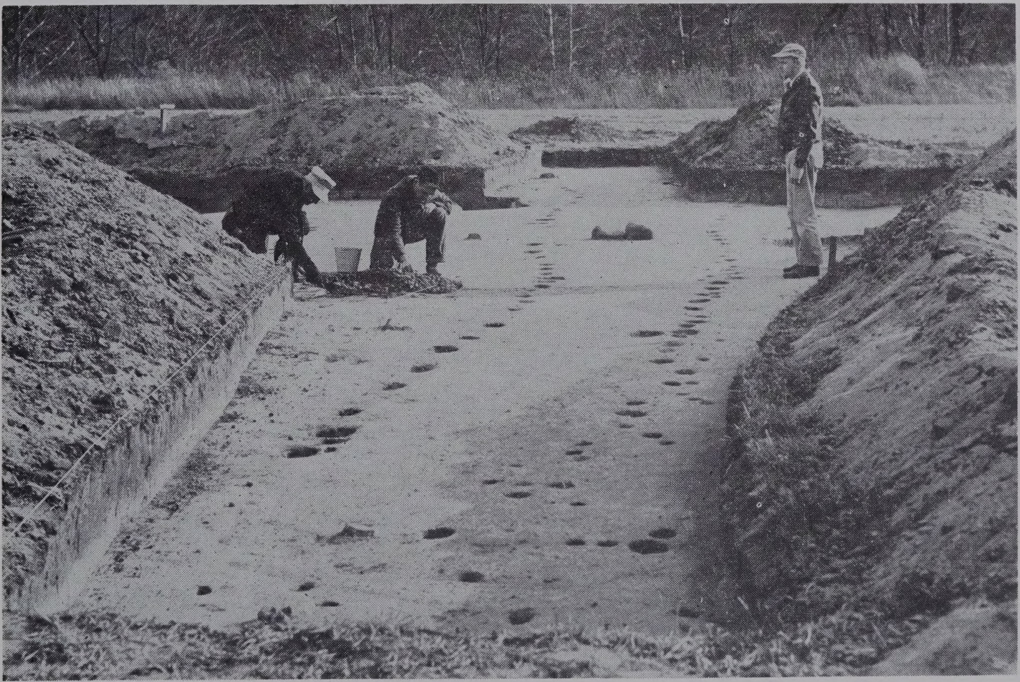

Plate II. Parallel stockade lines on the west side of village.

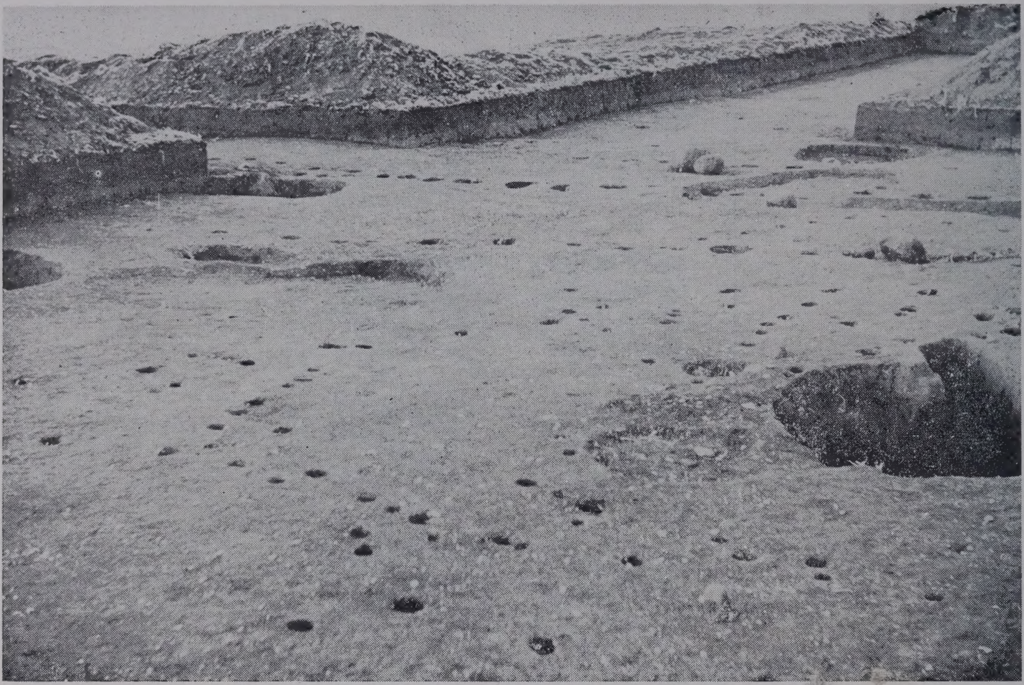

Plate III. General view of excavations on the west side of the village after clearing of features.

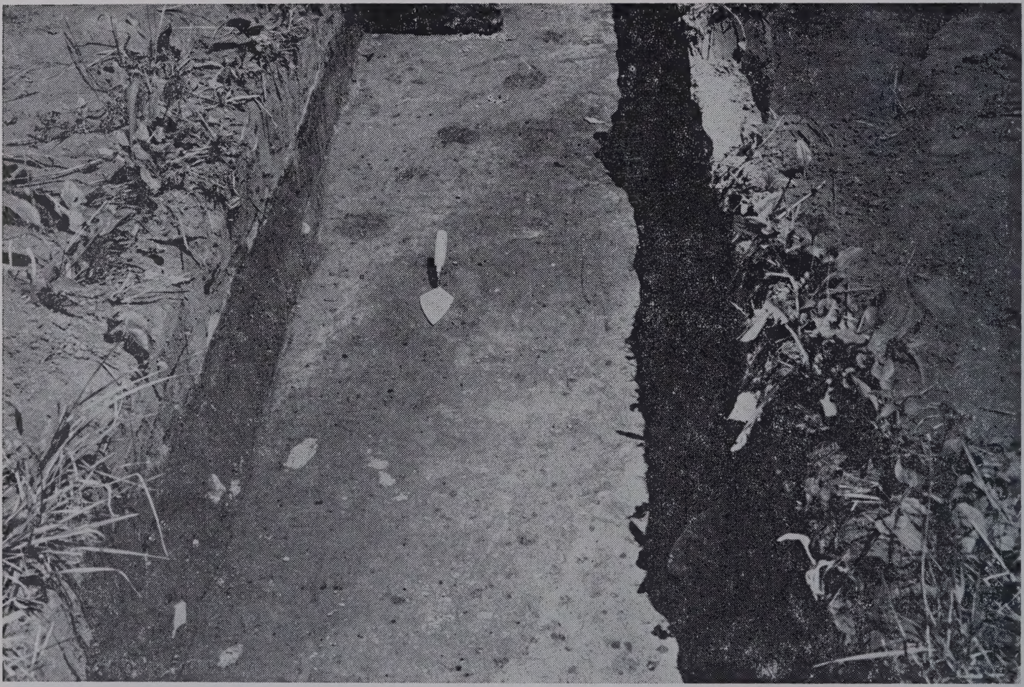

Plate IV. Stockade post molds and ditch before clearing on the north side of the village.

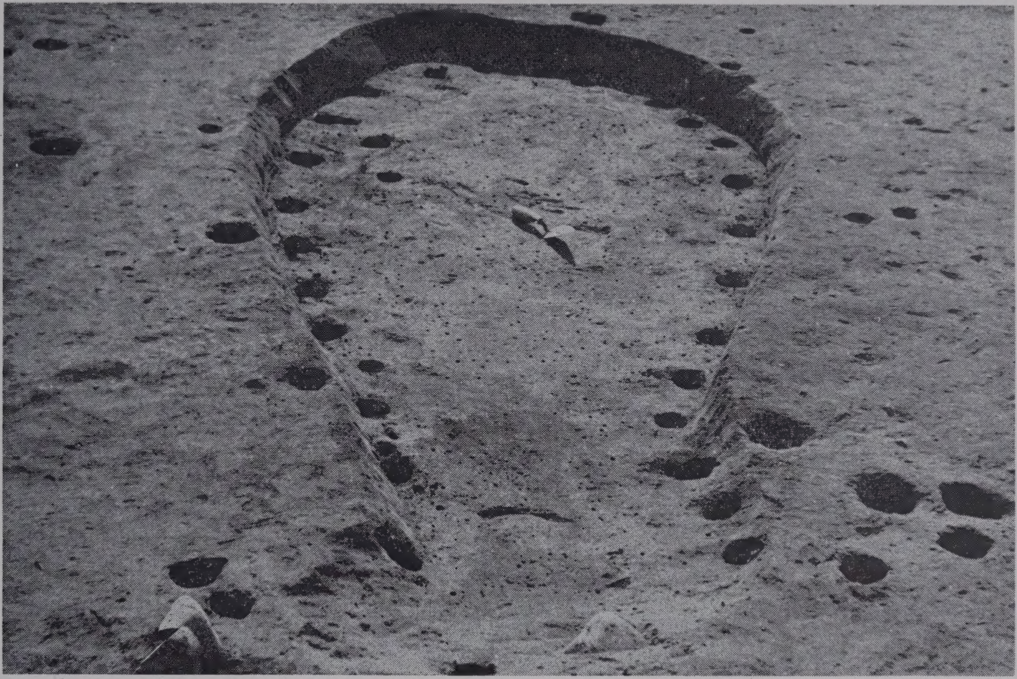

Plate V. Post mold pattern and pit of storage structures on the west side of the village.

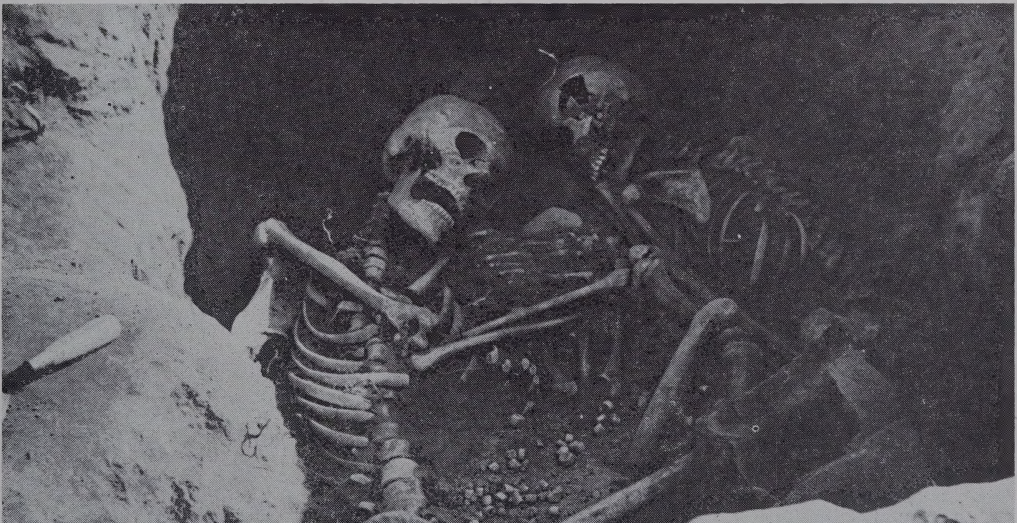

Plate VI. Pit containing Burials Nos. 10 and 11 with accompanying grave goods.

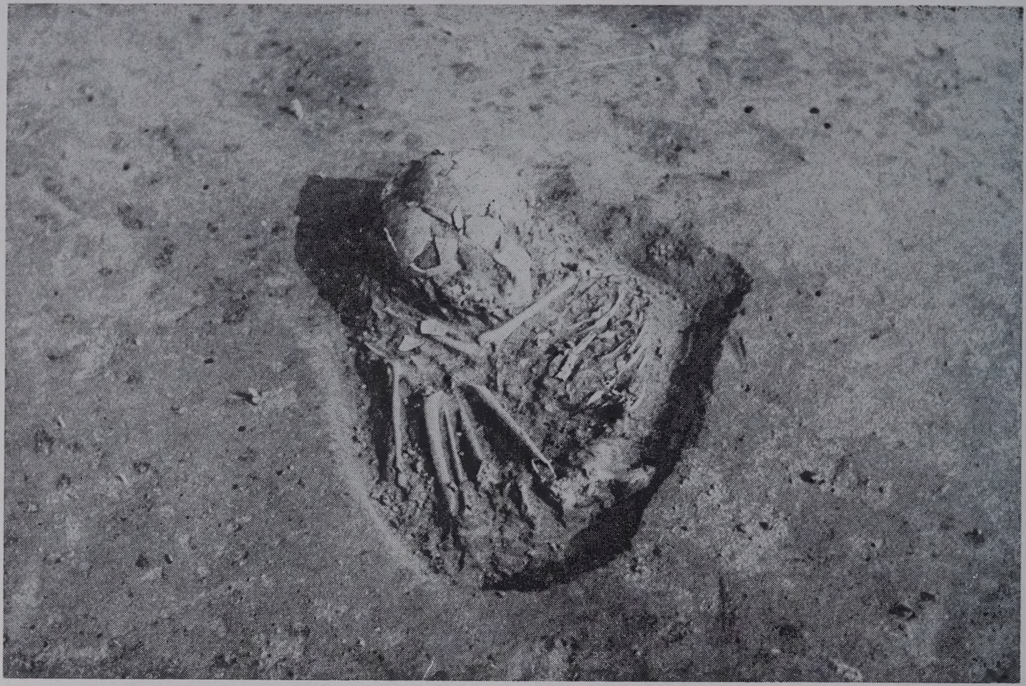

Plate VII. Remains of child Burial No. 5.

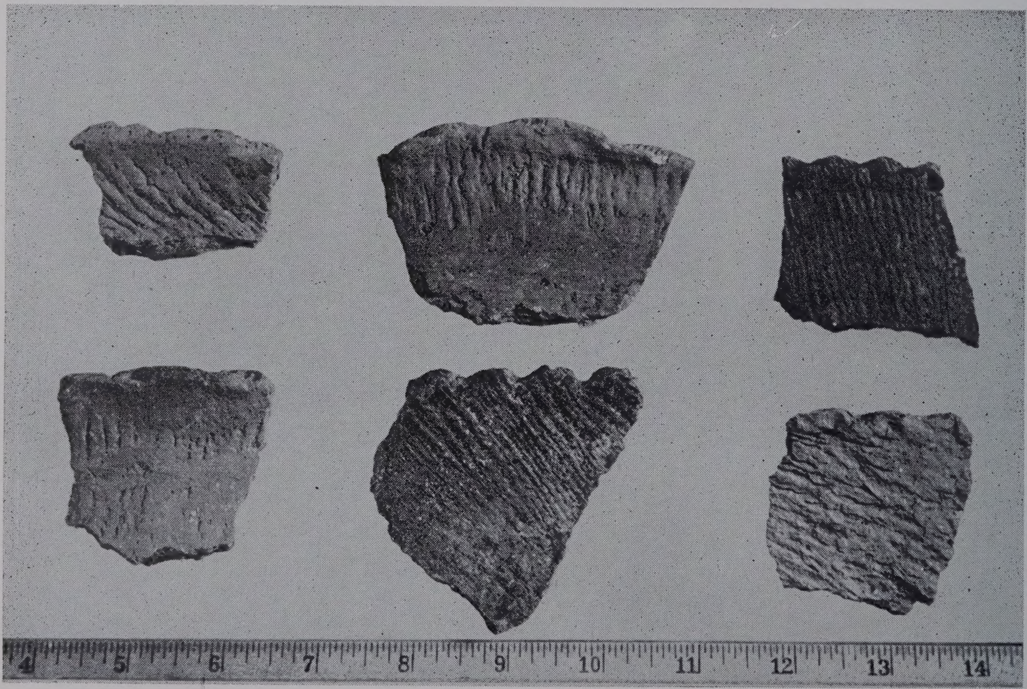
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Plate VIII. Monongahela Cord-Marked, cord-wrapped stick impressed rims.

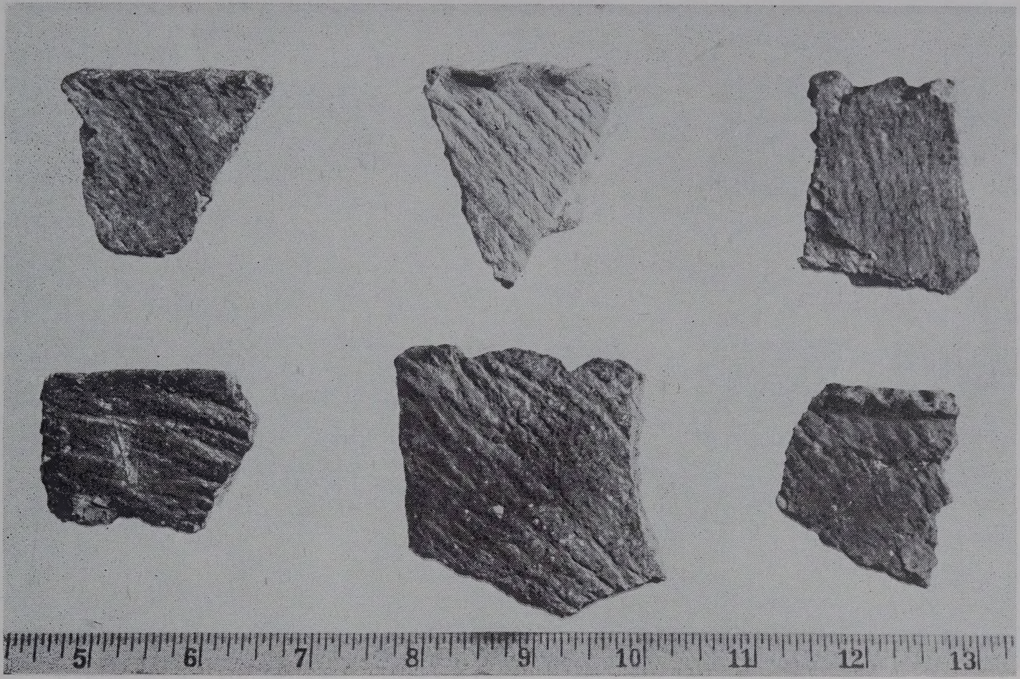
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Plate IX. Monongahela Cord-Marked, cord-wrapped stick impressed rims.

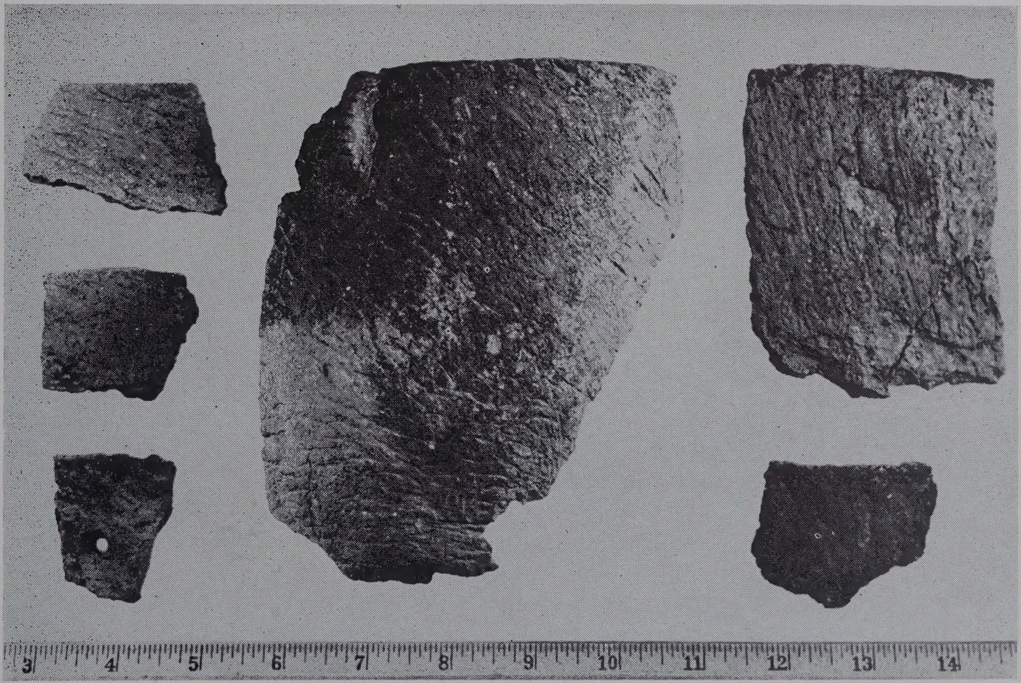
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Plate X. Monongahela Cord-Marked, cord-marked lips.

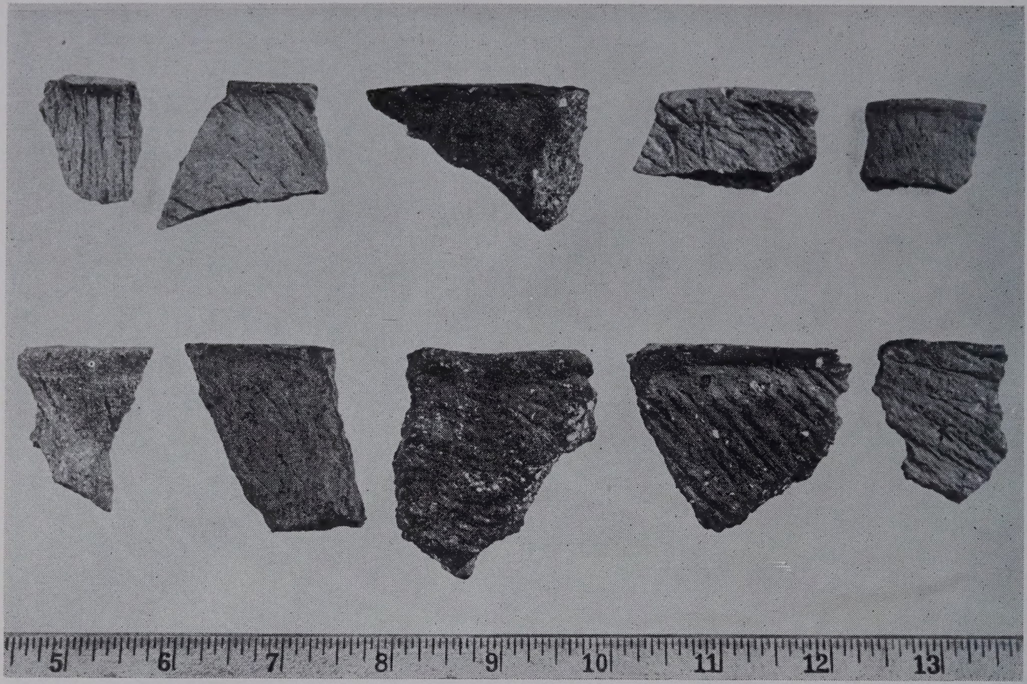
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Plate XI. Monongahela Cord-Marked, plain lips.

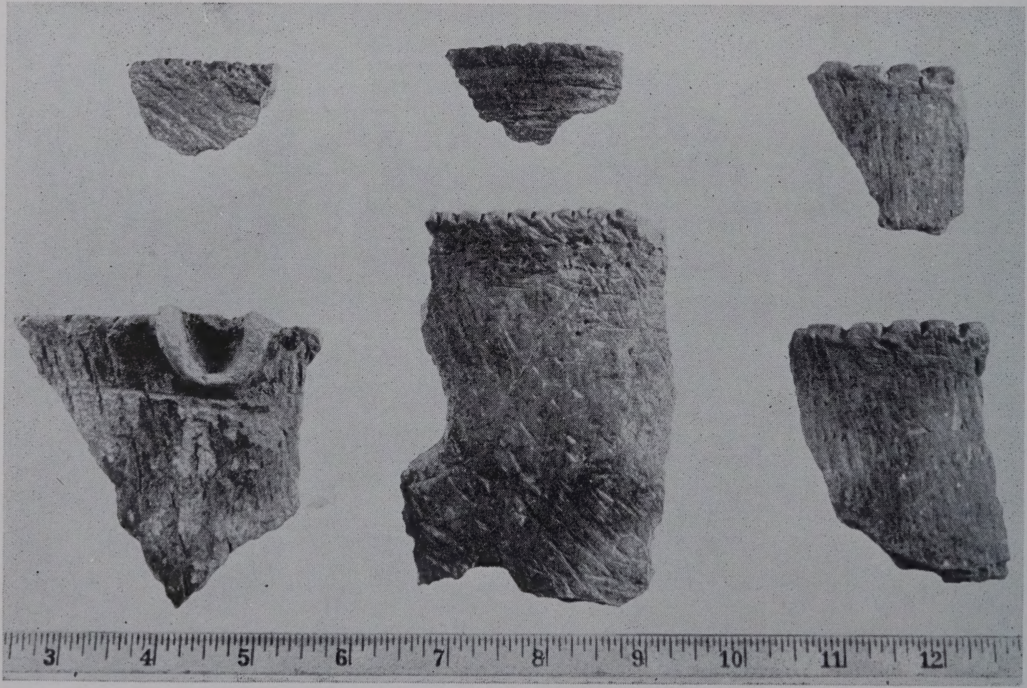
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Plate XII. Monongahela Cord-Marked, incised notched lips.

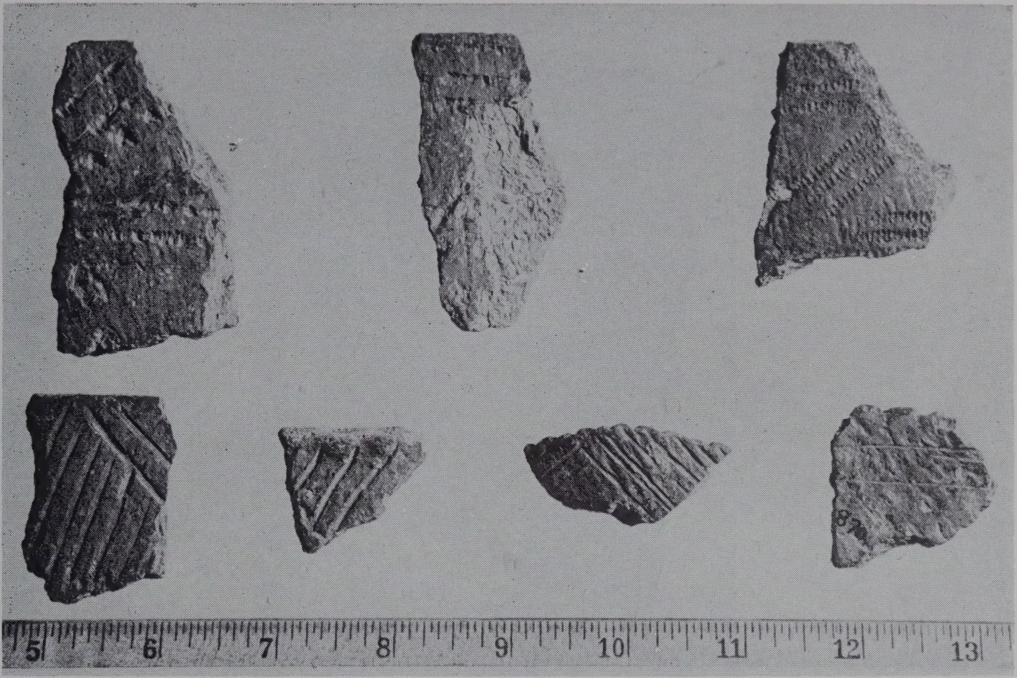
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Plate XIII. Monongahela Incised (plain surface) and McFate Incised (cord-marked surface decorated rims.

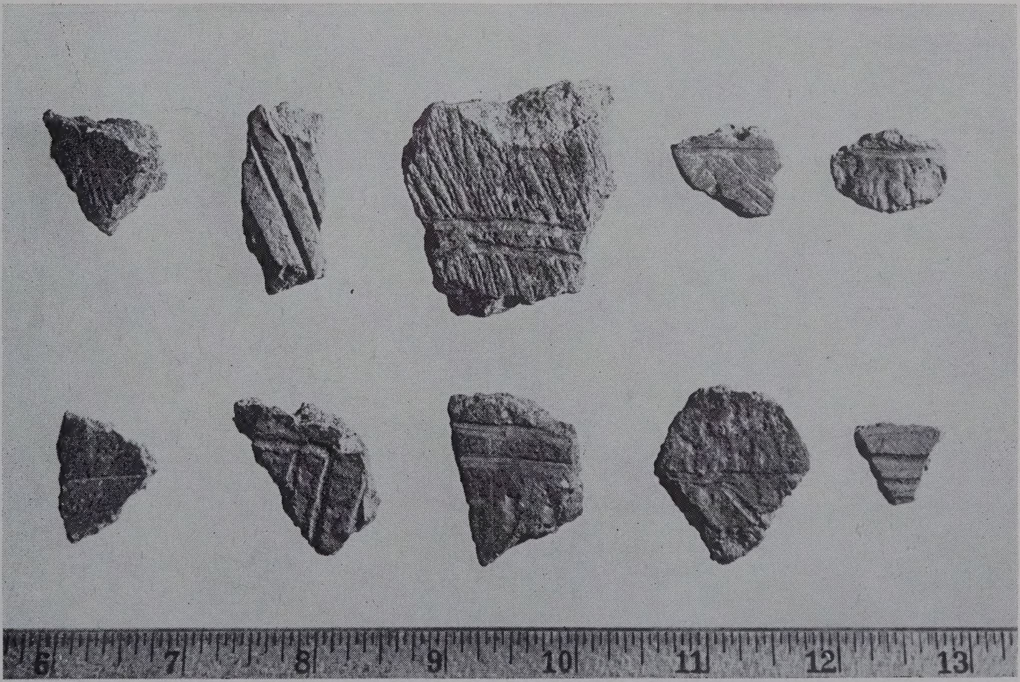
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Plate XIV. Monongahela Incised (plain surface) and McFate Incised (cord-marked surface), decorated body sherds.

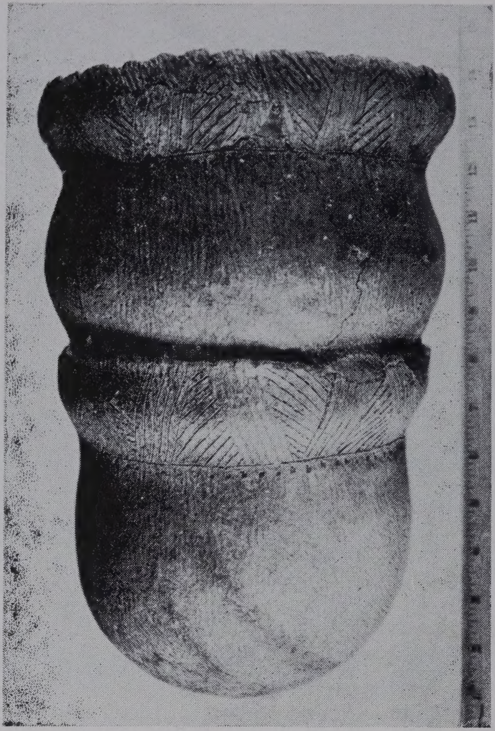

Plate XV. McFate Incised, vertical compound vessel.

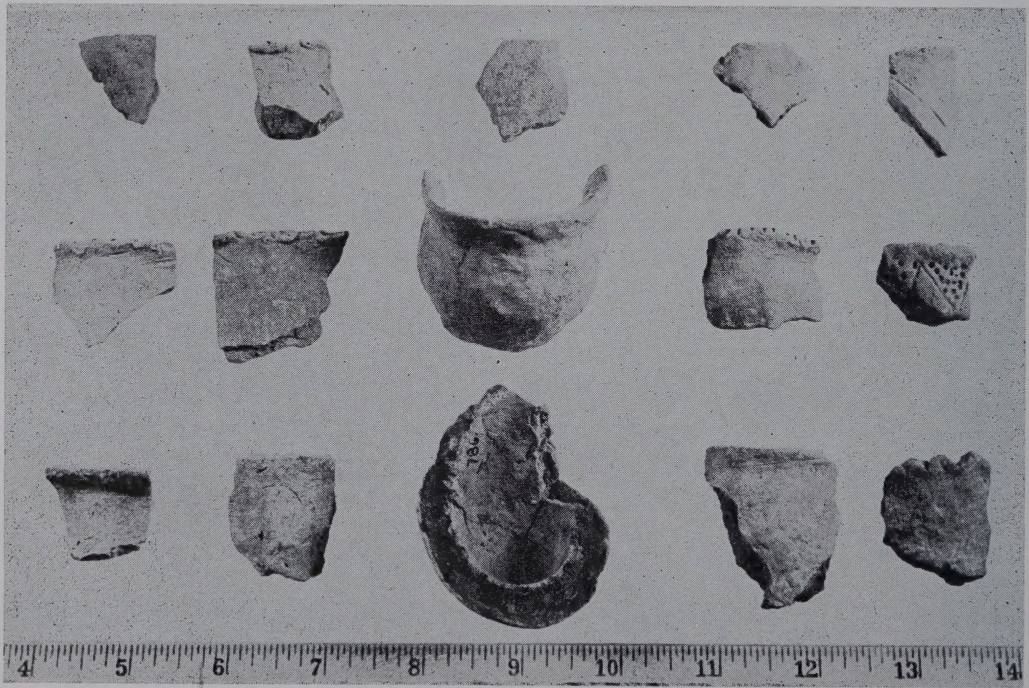
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Plate XVI. Scarem Plain, rim and body sherds of "toy" vessels.

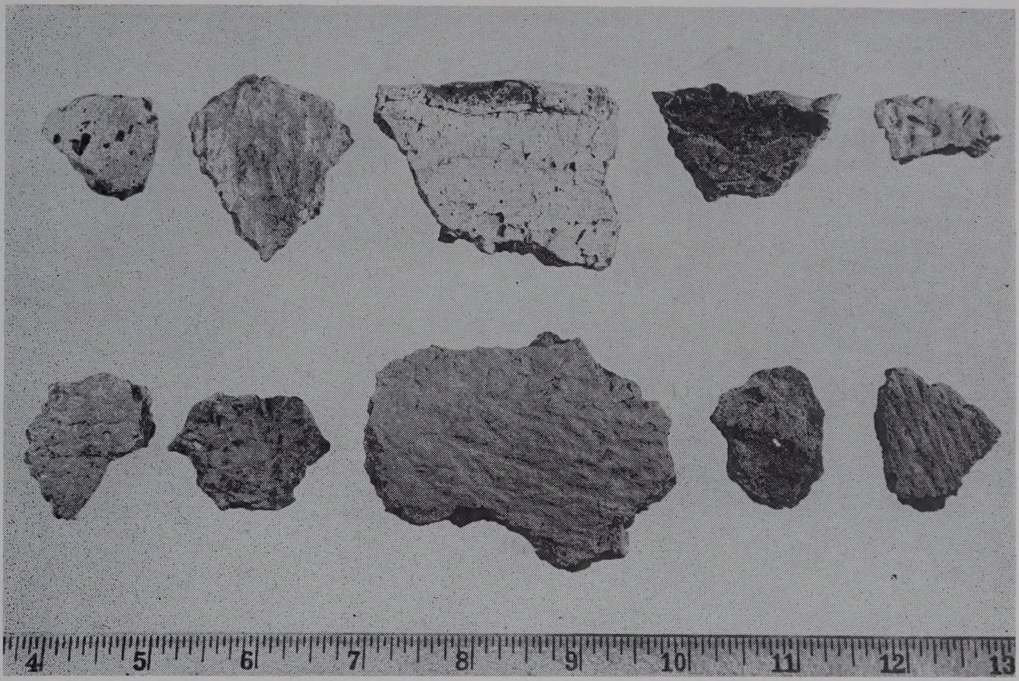
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Plate XVII. Watson Cord-Marked, limestone tempered rims and body sherds.

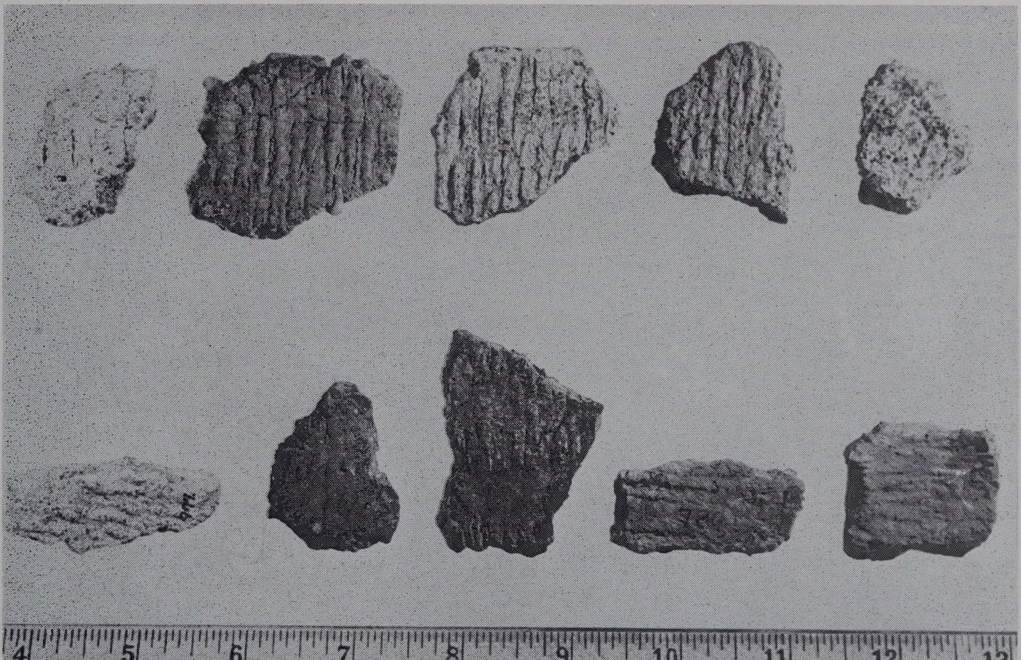
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Plate XVIII. Half-Moon Cord-Marked, exterior view of sherds in upper row, interior view in lower row.

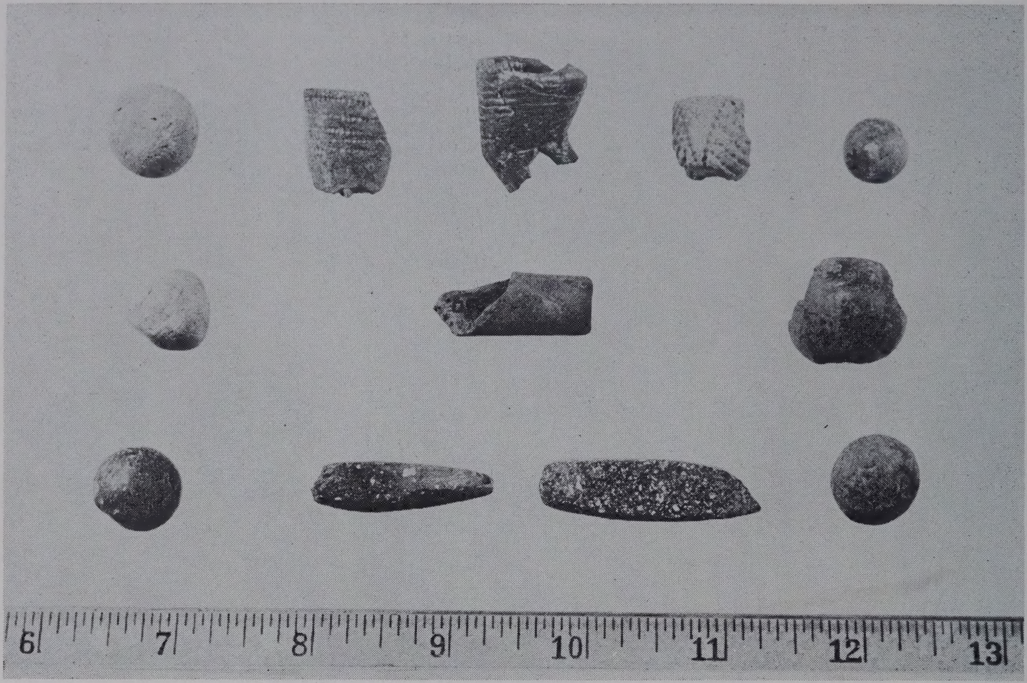
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Plate XIX. Clay pipes and balls, and reworked pottery fragment objects.

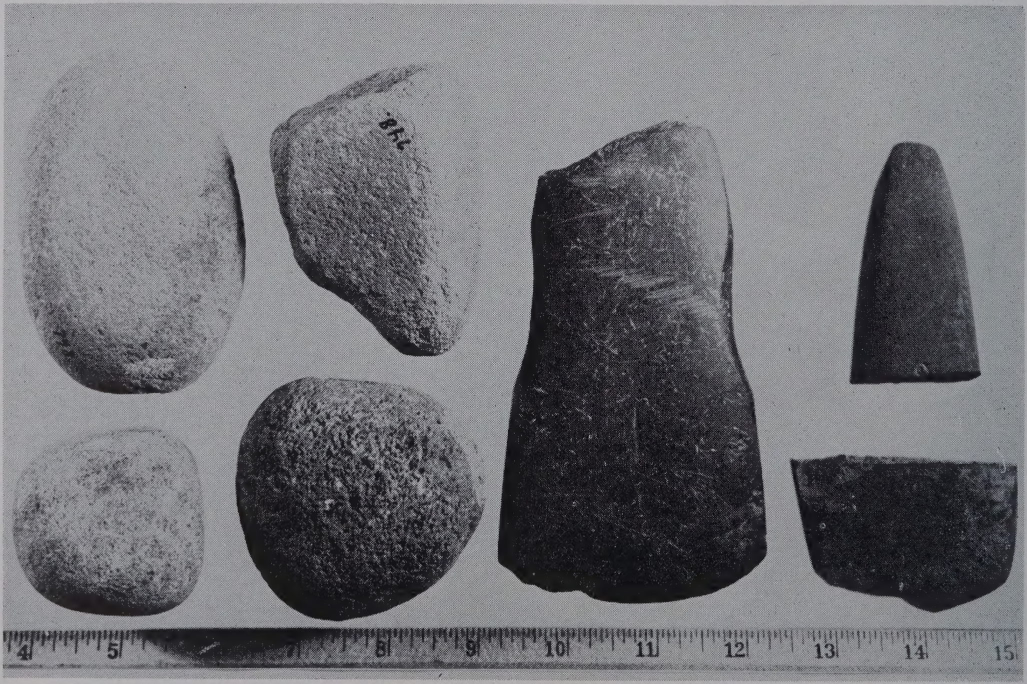
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Plate XX. Stone implements found in the excavations.

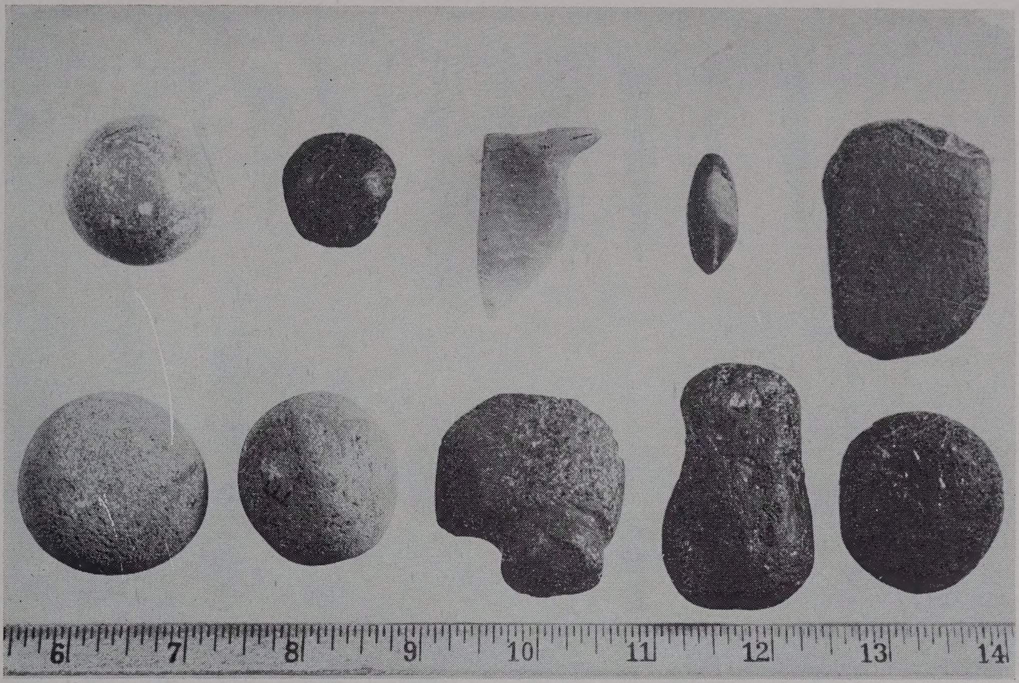
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Plate XXI. Stone pipes, balls, and worked canned coal objects.

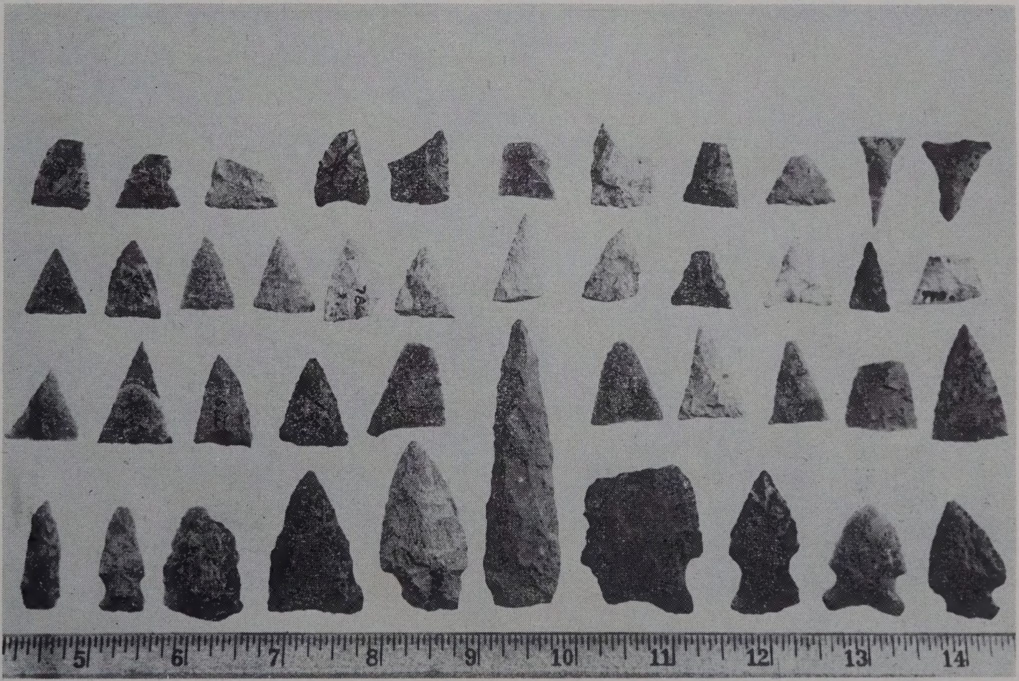
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Plate XXII Flint projectile point types found in the excavations.

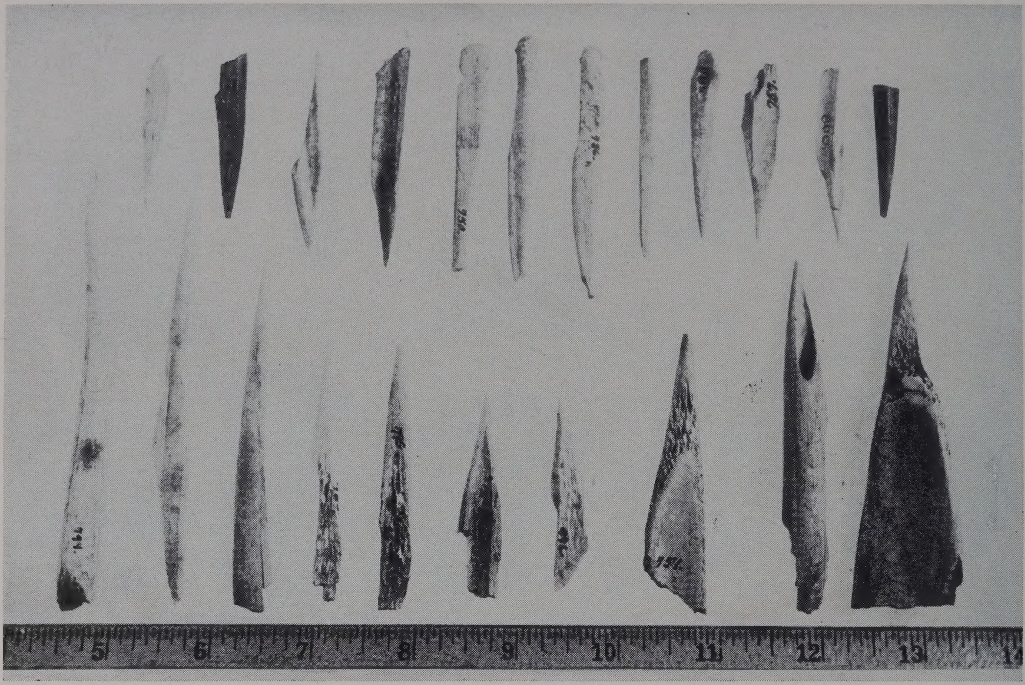
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Plate XXIII. Bone awls and pins.

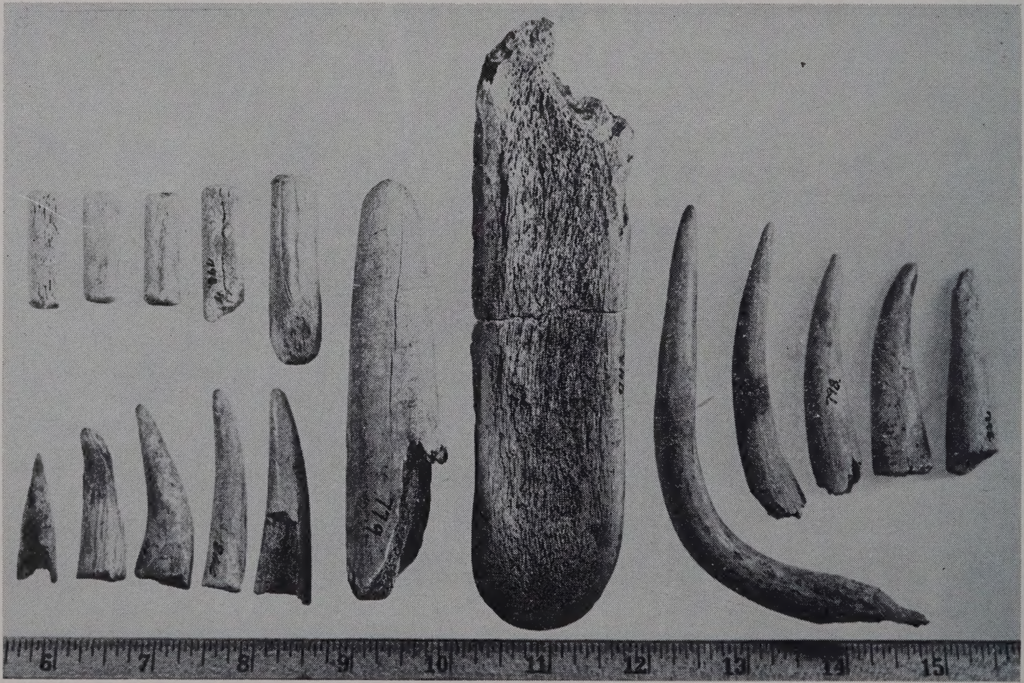
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Plate XXIV. Worked antler objects from the excavations.

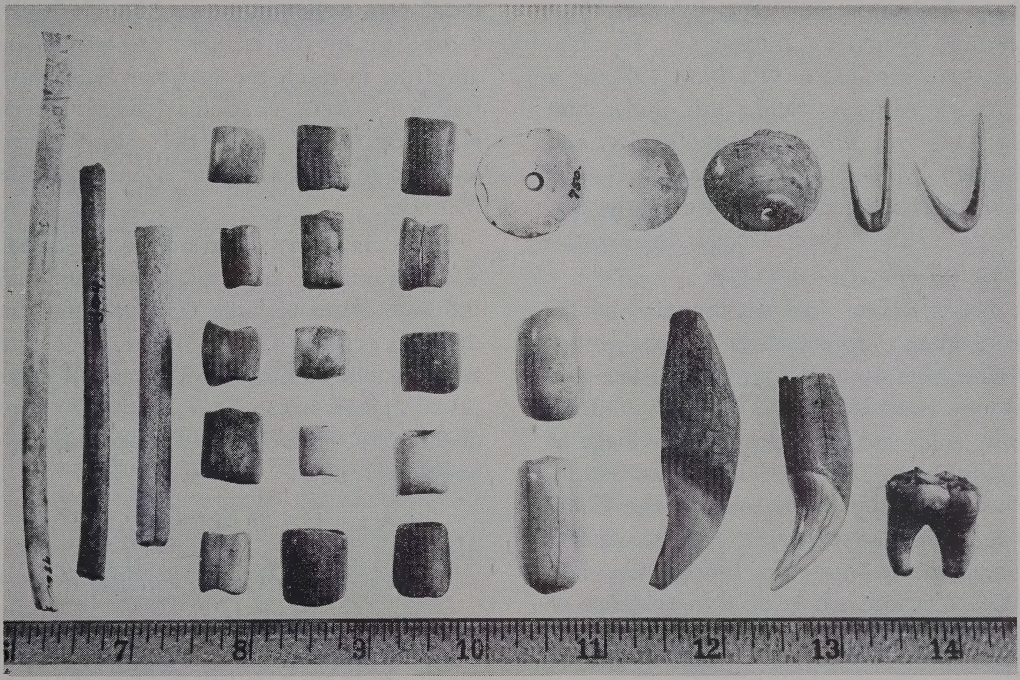
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Plate XXV. Bone tubes, beads, fishhooks, worked bear teeth, and beads of shell.

Animal Remains from an Indian Village Site, Indiana County, Pennsylvania

By

John E. Guilday*

This report is based upon a collection of bone fragments from the Johnston Site (36In2), Blairsville, Indiana Co., Pa. The site was excavated in Oct.-Nov. 1952 by a Carnegie Museum field party, under contract with the National Park Service, and directed by Mr. Don W. Dragoo. Results of these excavations are reported on by Mr. Dragoo in the present Memoir Issue of the "Pennsylvania Archaeologist."

The Johnston Site was occupied by Indians of the Monongahela cultural groups of the Mississippi Pattern during late prehistoric times dated at 1500 A.D. to 1600 A.D. This stockaded permanent village of approximately 4.7 acres in extent was located upon the north bank of the Conemaugh River, opposite the entrance of McGee Run, at Blairsville, Indiana Co., Pa., 937 feet above sea level. No evidence of historic contact was encountered at the site.

Sincere thanks are due Dr. Dana P. Snyder, who identified approximately 1/3 of the animal remains collection before turning it over to the writer and who maintained an active interest in the project. I wish to thank Mr. Don W. Dragoo for permitting me to examine this material and for much helpful advice and criticism, and Mr. Neil D. Richmond and Mr. Samuel B. Linhart for the identification of some of the herpetological material. I wish to extend special thanks to my wife, Alice M. Guilday, without whose patient assistance this project could not have been accomplished.

The bone material consisted of approximately 2000 (1866+) fragments. The material was well preserved although badly broken up by the Indians, presumably in an effort to reach the marrow. Some few fragments were charred. Except where otherwise noted, all of the material was returned to the Section of Man, Carnegie Museum.

846+ fragments could not be identified. The majority of these were fragments of the limb bones of large mammals such as deer, elk or bear. Of the 1020+ fragments which could be identified, mammals comprised approximately 74%, birds 9%, reptiles 13%, amphibians 1%, and fish approximately 3%.

List of Species

Mammals

Black Bear (*Ursus americanus*): 9 bone fragments

Dragoo (op.cit.) reports two awls made of bear baculi from the site. Bear canines and molars modified into pendants were also discovered during excavation.

Raccoon (*Procyon lotor*): 16 bone fragments

Striped Skunk (*Mephitis mephitis*): 2 bone fragments

Gray Fox (*Urocyon cinereoargenteus*): 12 bone fragments

This species was apparently common and readily utilized by the Indians. This is in striking contrast to the absence of remains of the red fox. (See discussion)

---

*Mr. John E. Guilday, c/o Carnegie Museum, Pittsburgh, Pa.

Wolf (*Canis lupus*): 1 bone fragment

This fragment, a large section of the right maxilla containing the fourth premolar, was placed in the collection of mammals at Carnegie Museum.

Dog (*Canis familiaris*): 3 bone fragments (including one nearly complete lower jaw)

The dog was the only domestic animal known to have been possessed by the Indians of this area. The lower jaw was placed in the collection of mammals at Carnegie Museum.

Dog or Wolf (*Canis* sp.): 3 bone fragments

Bobcat (*Lynx* cf. *rufus*): 5 bone fragments

Although there is abundant historical reference to the Canada lynx (*Lynx canadensis*) in Southwestern Pennsylvania, its actual remains have not appeared in archaeological material. It was apparently rare but generally distributed throughout the area (Grimm and Roberts, 1950). Bobcat remains, on the contrary, are of common occurrence in Indian refuse heaps. The five fragments, one of which was a portion of lower jaw, were identified as bobcat on the basis of size. One fragment, a distal end of a humerus, had been grooved around and cut from the shaft, possibly in the manufacture of beads.

Woodchuck (*Marmota monax*): 20 bone fragments

Chipmunk (*Tamias striatus*): 2 bone fragments

Gray Squirrel (*Sciurus carolinensis*): 7 bone fragments

Fox Squirrel (*Sciurus niger*): 5 bone fragments

Although the remains of gray and fox squirrel were present in about equal amounts, the sample is too small for the relative amounts to be of any significance.

Gray or Fox Squirrel (*Sciurus* sp.): 5 bone fragments

Beaver (*Castor canadensis*): 11 bone fragments

Incisors of this species, modified into pendants, are recorded from this site (Dragoo, op. cit.).

Rice Rat (*Oryzomys palustris*): 15 bone fragments

The rice rat was evidently a common animal at the Johnston site. Remains of at least four individuals were recovered. Reports from Indian village sites in Illinois, Indiana (McLaughlin and Robertson, 1951), Ohio (Goslin, 1951), West Virginia (Guilday and Mayer-Oakes, 1952), and Western Pennsylvania (Gilmore, 1946), indicate that the range of the rice rat formerly extended from 100 to 250 miles farther north in the Ohio Valley.

It seems probable, as Goslin suggests (op. cit.), that the rice rat flourished in the village areas of the Indians, living on stored foodstuffs, grain, etc., filling the same environmental niche as the Norway rat (*Rattus norvegicus*) does in our present society. There is evidence that the Late Prehistoric peoples of this area migrated into the region from the southwest via the Ohio River and its tributaries (Dragoo, op. cit., et.al.). It is quite probable that the rice rat simply tagged along, leading a commensal existence, capable of survival in this peripheral part of its range only in the unique habitat afforded by the village areas. There, competition with native species would be reduced to a minimum, food would be plentiful the year round, and a relative degree of protection from predators would be provided by the village itself. McLaughlin and Robertson (op. cit.) point out that the increase in range may have been due to, ". . . an increase in population pressure resulting in eruptive spread beyond the normal range limits." The direct association of the rice rat with the Indian village sites may be somewhat artificial, evidence produced by the fact that an archaeological site is one of the few places where numbers of bones may be preserved. It may reflect nothing more than the industry of the archaeologist. However, it seems probable that the relationship was a real one.

The reduction in range of the rice rat from prehistoric times to the present is probably due to the extinction of the Indian and the changes brought on by the settlement of the country.

The rice rat bone fragments were placed in the collection of mammals at Carnegie Museum.

Muskrat (*Ondatra zibethica*): 1 bone fragment

Cottontail Rabbit (*Sylvilagus sp.*): 1 bone fragment

Reports of mammal remains from archaeological sites in Western Pennsylvania agree on the scarcity of rabbit remains (Gilmore, op. cit., Mayer-Oakes, 1954). This low incidence of rabbit is in keeping with the formerly heavily-wooded aspect of the country.

White-tailed Deer (*Odocoileus virginianus*): 609+ bone fragments

60% of the identified fragments in the collection and probably well over half of the unidentified were deer.

Elk (*Cervus canadensis*): 28 bone fragments

A gouge or chisel, fashioned from elk antler, was found at this site Dragoo, op. cit.).

Pig (*Sus*): 1 bone

This bone, a complete tibia of a young animal, was undoubtedly of recent origin and had no connection with the Indian occupation.

Birds

Ruffed Grouse (*Bonasa umbellus*): 3 bone fragments

Wild Turkey (*Meleagris gallopavo*): 32 bone fragments

Bird sp.: 55 bone fragments

Beads fashioned from short sections of bird limb bones were common on the site. A bone tube found buried with a female Indian skeleton and believed to have been worn in the hair was made from the limb bone of a large bird, possibly a swan.

Reptiles

Snapping Turtle (*Chelydra serpentina*): 1 bone fragment

Wood Turtle ? (*Clemmys insculpta*): 1 bone fragment

Box Turtle (*Terrapene carolina*): 90 bone fragments

The carapace of this turtle was extensively used as a cup or ladle. Most of the fragments showed signs of such usage: the vertebral centra were scraped away, the edges of the shells trimmed and smoothed, and often the surfaces highly polished.

Soft-shelled Turtle (*Amyda* sp.): 1 bone fragment

The species is either the Spiny Soft-Shelled Turtle (*Amyda spinifera*) or the Spineless Soft-Shelled Turtle (*Amyda mutica*). Only the former has been recorded from Indiana County within Historic Times (Netting, 1936). The Spineless Soft-Shelled Turtle is extremely rare and local in Western Pennsylvania (Netting, 1944).

Turtle: 34 unidentified fragments

Amphibians

Hellbender (*Cryptobranchus alleganiensis*): 4 vertebrae

Frog sp.: 5 bone fragments

Fish

Freshwater Sheepshead (*Aplodinotus grunniens*): 2 otoliths

Fish sp.: 27 bone fragments

Two finely made bone (Deer?) fishhooks were recovered during excavation of the site (Dragoo, op. cit.).

Discussion:

Fifteen species of wild mammals, two species of birds, three of turtles, one amphibian and one fish were identified from the refuse material of the Johnston site. Many of the animals of the region, although common and widespread in distribution at the time, may easily have been absent from the refuse material. The sample is a biased one. Species that were difficult to take, that were not palatable, or were of little use to the Indian would be rare or absent. Consequently, the absence of a given species from an archaeological site may have little value in interpreting that animal's former range. The absence of three animals, opossum, red fox and porcupine, from the site deserves special notice, however.

The bones of the opossum (*Didelphis marsupialis*) are quite common from archaeological sites in Ohio. At the Cramer Site, Ross Co., Ohio, approximately 300 miles southwest of our area, opossum remains were found (Goslin, 1952). Apparently the opossum was utilized wherever available. Five sites in Western Pennsylvania (Fort Hill, Somerset Co., Martin, Fayette Co., Phillips, Fayette Co. (Gilmore, op. cit.); Scarem, Washington Co. (Mayer-Oakes, op. cit.), and the Johnston Site, Indiana Co., have yielded no opossum remains. In all probability the animals' range did not extend as far up the Ohio Valley as Western Pennsylvania in Late Prehistoric times. Within historic times the range of the opossum has advanced far to the north. The opossum was rare or absent in Southwestern Pennsylvania until the late 1800's (Rhoads, 1903). At present it occurs throughout the state.

The red fox (*Vulpes fulva*) was apparently absent from this area as well. Gray fox remains are plentiful on prehistoric sites. As Gilmore points out (op.cit.), osteological differences between the red and the gray fox are pronounced enough that a determination is generally trustworthy. Goslin (letter) states that the red fox is rare or absent in archaeological material from Ohio. Red fox remains have been reported from two sites in Ohio (Goslin, 1950. Griffin, 1943) and one in Kentucky (Smith, 1910). Rhoads (op.cit.) is of the opinion that the eastern red fox may have been introduced from England during colonial times for fox-hunting, and archaeological evidence in this area does little to disprove this.

The porcupine (*Erethizon dorsatum*) is essentially a boreal mammal, closely confined to coniferous forests. At the present time the porcupine, rare and local in distribution in Southwestern Pennsylvania, is closely confined to the Allegheny Mountain Section of Eastern Indiana, Cambria, Somerset and possibly Westmoreland Counties. (Grimm, op.cit.). To date porcupine remains have not been identified from Indian sites of this area. If present in any numbers they would undoubtedly have been utilized by the Indians. Goslin (letter) states that porcupine remains are commonly found in Ohio sites in the Lake Erie section. In all probability the porcupine was absent or rarely encountered in this area during Late Prehistoric times.

With the exception of the rice rat and those mammals exterminated by the advent of the white man, all of the animals recorded from the Johnston Site may be found in the area today.

Summary

A collection of approximately 2000 bone fragments from the Johnston Site (36In2) at Blairsville, Indiana Co., Pa., was examined. This site was a permanent Indian village during Late Prehistoric times (c. 1500 A.D.-1600 A.D.).

Animals identified from the material which are not found in the area today include: wolf, Indian dog, bobcat, beaver, rice rat, elk, and wild turkey.

It was suggested that the rice rat was not a member of the native fauna but may have been inadvertently introduced from the southwest via the Ohio River Valley by migration of agricultural Indians. The rice rat in this area probably led a commensal existence, directly dependent upon Indian agriculture. It is felt that the withdrawal of the Indian and the attendant disappearance of the specialized environmental niche afforded by the village areas is sufficient to explain the decrease in range of the rice rat from that date to this.

The absence of opossum, red fox and porcupine remains was noted.

The fauna recovered was entirely modern in aspect and would seem to indicate that environmental conditions have remained essentially the same during the past four or five centuries. This is in accord with the conclusions of Gilmore (op. cit.) based upon animal remains from other archaeological sites within the same general area.

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